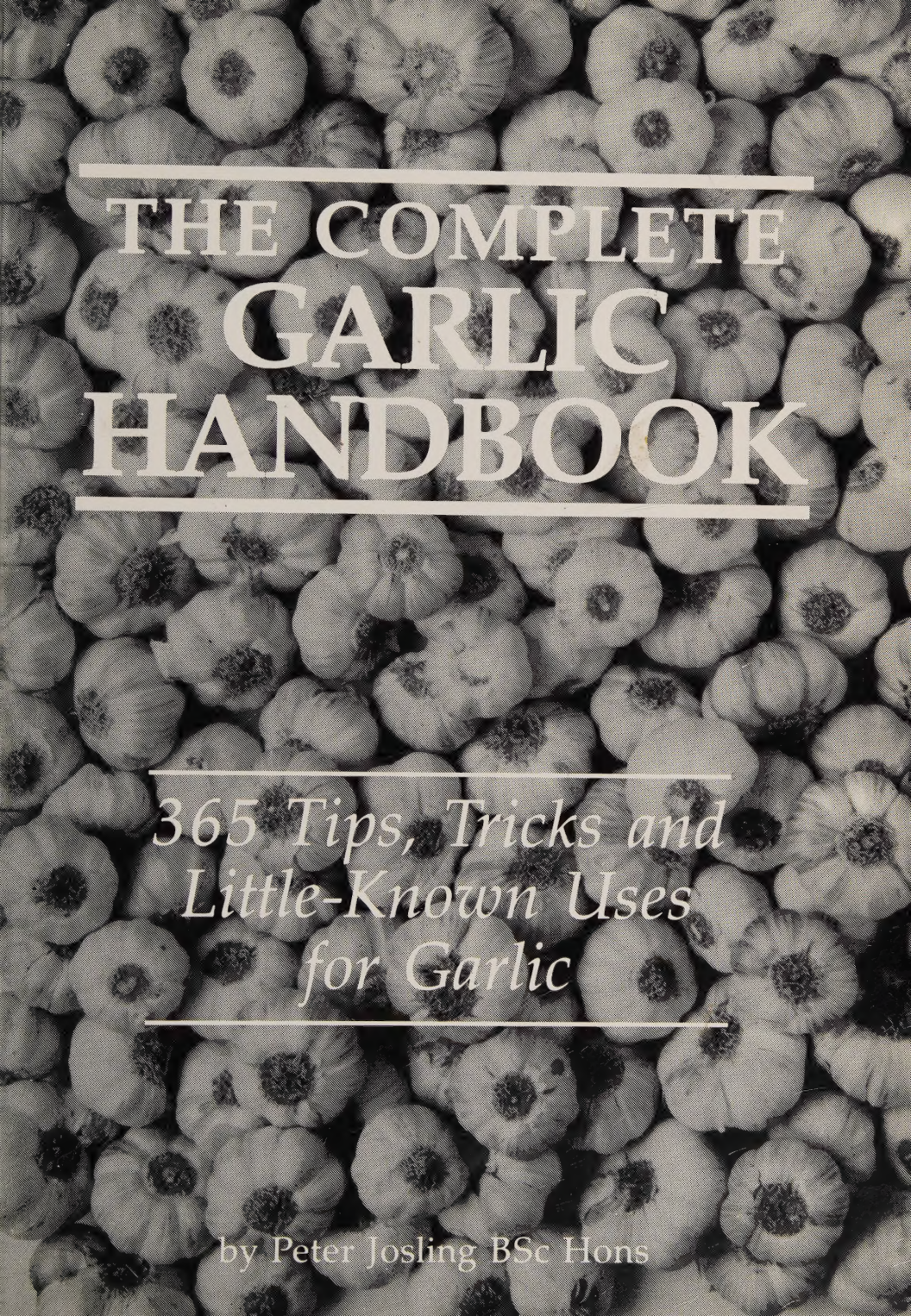
THE COMPLETE
GARLIC
HANDBOOK
365 Tips, Tricks and
Little-Known Uses
for Garlic
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365 Tips, Tricks and Little-Known Uses for Garlic

by Peter Josling BSc Hons
Director –
The Garlic Information Centre

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Introduction

Dear Reader,

When I was asked to write this book I decided to sit down and form a plan of what I was going to cover. It soon became evident that I could have written an entire medical text book when trying to detail all the conditions, ailments and chronic diseases that garlic has been used to treat – more often than not successfully!

I can't think of any other plant that has such an established and magnificent track record for performing good deeds. Dating back to the early Egyptians and Sumerians over 5,000 years ago, this remarkable herb was quickly established as the most adaptable and proficient food widely used for both its culinary and medicinal benefits.

Over the last 10 to 15 years an enormous amount of research has been published as garlic therapy has begun to move into the prevention and treatment areas of the world's two biggest killer diseases; cancer and coronary heart disease. These modern day killers, particularly in the developed world, account for over 50 per cent of all deaths in Europe and America with the UK particularly high up the scale.

Yet the paradox is that those nations where garlic is a strong part of the culture and daily life show much lower coronary death rates and significant protection from cancer. Obviously, there are many other factors involved, but this book, for the first time, details the results of medically approved studies and confirms what great physicians, herbalists and healers have suggested for thousands of years, namely, **GARLIC IS GOOD FOR YOU!**

However, no book on garlic would or could be complete without recording how this reputation was established and how history and folklore sums up the value of garlic. So you will find in this book 365 things you may or may not have known about garlic. If you can think of anything that garlic was used for in your experience that is not recorded here, please write to me at The Garlic Information Centre and I promise to include it in any future editions of *Garlic – facts not fiction.*

Do please remember that before following any of the suggested uses for garlic in this book, readers are asked to give consideration to any health problems they may have and should refer to a general practitioner or physician for advice. Many of the remedies recorded however, do work, so start chopping your way through the full story of garlic!

Kindest regards,

Peter Josling
Director – The Garlic Information Centre

CHAPTER ONE

The History of Garlic

Garlic has a reputation as a "herb all heal" established over many thousands of years. Of all the numerous herbs, spices and seasonings it must be, not only the best known to most people, but the most useful plant across many walks of life.

The history of garlic and its use as a valuable food and restorative medicine goes back to Egyptian times but it was also popular with the Babylonians and the Hebrews. The great pyramid at Giza has an inscription showing how much garlic and onion was consumed by those workers who built the pyramids. Indeed it is reported that garlic was the cause of the first ever labour strike; as when the ruling Egyptians removed the daily ration of garlic, given to the slaves to ward off disease and build strength, they immediately downed tools and refused to continue working until the rations were restored! Even then this humble bulb was revered, as the Egyptians often left clay models of garlic in ordinary graves and, when Tutankhamun's tomb was excavated in 1922 by Howard Carter he found six bulbs of garlic carefully placed in the tomb – probably to ward off evil spirits.

This race knew well the power of garlic. According to record the Egyptians were renowned for growing vast quantities of grain and therefore made enormous amounts of bread – the staple part of an average diet in those days. Unfortunately, this could often lead to problems with tooth decay since constant milling of the flour led to fine grains of silica breaking down from the sandstone mill-wheels. The only solution was to use the pungent qualities of garlic, as it was ground in to a paste, and applied straight to the aching tooth!

This rather hot climate was also infested with mosquitoes, gnats and other biting insects, many of which could harbour malaria and other infectious diseases of the time, but once again garlic was able to repel these nasty beasties!

As time moved on the uses of garlic in medicine flourished and many great physicians and philosophers recalled the usefulness and effectiveness of garlic. Hippocrates, Homer, Aristotle, Pliny, Galen, Virgil and Muhammad all believed garlic to have many useful properties. The Greek and Roman armies were fed garlic to build strength, and the first Olympian athlete's consumed vast quantities before a competition to build stamina and keep free from illness. It was thought to be food fit for a god or goddess, and was placed ceremoniously on piles of stones at crossroads for the goddess Hecate.

Ever since those days of our early civilisation garlic has been used by all the leading cultures around the developing world. Nowhere more so than China where garlic has always been used in both cooking and medicine. The Chinese call garlic "suan" which is written as a single sign indicating the earliest recognition amongst the Chinese culture. Traditionally, garlic was used as an aid to long life as it was known as both a "healing" and a "heating" herb which had so many benefits to the circulation, for tumours, tuberculosis, coughs, colds, infections and wound healing.

The Romans introduced garlic to Britain in the Dark Ages where it was grown in monastery gardens and, by the Middle Ages, garlic was well-established although not exclusively loved by all! It was around this time that legends began about the magical properties of garlic and its renowned ability to ward off evil spirits and in particular vampires!

First thought to have been grown in Elizabethan country gardens in the 16th century, garlic became known as peasant's food and the odour was then thought to be offensive and not something of which the middle and upper classes should approve. Here garlic acquired the country name of Poor Man's Treacle, which came from a Greek word for "antidote", which in Latin was theiracus. It was also commonly known as Devil's Posy and Witch Poison as it was thought to fight off evil. Another name that became synonymous with garlic was Camphor of the Poor after its strong odour.

However, since the World Wars, things have moved on in garlic's

favour. During the First World War, the British Government offered to pay a shilling a pound to garlic growers throughout the UK. This was because garlic's medicinal properties were being used to fight off dysentery and act as an aid towards healing the wounded soldiers. In the Second World War garlic was again used extensively for its antibiotic qualities.

Since then the garlic crop has been growing substantially. The most recent figures suggest that enough garlic is grown for every person on the planet to eat one clove every day!

In the tips, tricks and little-known facts about garlic you will find many mentions of folk remedies and unexpected uses of garlic in many different situations. This all bears testament to its miraculous ability to heal and fight disease. Experience now tells us that in modern times it is not only a great healer, but a great preventative for some modern day killers.

CHAPTER TWO

The Plant and its Chemistry

Garlic the plant

Garlic is a plant whose origins lie in the steppes of Central Asia, where it grows wild. As a member of the lily family (Liliaceae) its botanical name is *Allium Sativum* (for the cultivated variety) and other close members of the family include the onion *(Allium Cepa)*, chives *(Allium schoenoprasum)*, the leek *(Allium porrum)* and the shallot *(Allium ascolonium)*. It is also related to the autumn crocus, the bluebell and lily of the valley. Several varieties of wild garlic grow in Britain, usually in wooded areas. Of all the alliums garlic is the most potent and the most well known for both its culinary abilities and of course its numerous medical applications.

The plant is ideally suited to many climates but prefers to be in a sunny position. Generally, garlic grows best in a light sandy soil that is not too rich and its green shoots normally reach up to about three feet high. Beneath the soil lies the bulb, which tends to develop most after the plant has flowered. All parts of the plant are scented but the bulb is the strongest. Each bulb consists of between seven and twenty cloves which are covered in a papery thin skin. The skin should peel off easily if the garlic is not past its best. The long pointed leaves are thought to have given rise to the name "gar", meaning in Old English spear or lance and "leac" leek or pot herb or vegetable. In Spain the leaves are harvested and form part of a traditional *tapas*.

Garlic is best planted in late October or early November to produce a crop the following spring. Later planting, in warmer climates produces a crop in July or August. The flowers are usually small and

white, sometimes tinged with green or purple and densely packed together.

Garlic makes a very good companion plant, particularly for roses, who will lose any blackspot when planted near to garlic. It is also said that the roses smell sweeter as they have to manufacture more perfume to overcome their neighbour's special aroma! Other crops thrive as well when garlic is planted nearby including carrots and leeks. Garlic can be attacked by blackspot, but is generally very hardy. Sometimes worms, maggots and other nematodes can attack garlic as well.

In China vast crops are grown, partly for commercial tablet production. The bulbs are pulled up when the weather is settled and then the garlic is allowed to dry before being sent on to market.

Garlic may be stored for anything up to six months, provided you hang it in a cool, dry and preferably dark place. Keep it away from other vegetables and if you see it begin to sprout, plant the cloves quickly and your crop will come again next year!

Garlic in its raw form

When you buy raw garlic from the shops you may or may not know from where it originates. Quite often these days supermarkets will tell you the country of origin and in the UK our garlic comes mostly from Spain. We do however produce our own, particularly on the Isle of Wight where a garlic festival is held each year! (see Chapter 8)

However, because garlic is a plant, its quality will vary and this depends on the soil nutrient content, relative humidity, sunshine and what is added to or taken away from the soil it is cultivated in.

Two accepted methods for measuring the quality of raw and processed garlic are to determine how much callicind it can release (this is a measure of how much alliin is contained in the garlic bulb also) and what the total sulphur content is. Since allicin is the first thing formed when garlic is cut or crushed (see later) scientists have been able to measure the amount of allicin released from different garlics around the world. The graph below shows how variable it can be. The amount of allicin generated from a bulb of garlic can vary by as much as 10 times, but overall Chinese garlic seems to provide the most allicin. Unfortunately, even when you plant Chinese garlic in the UK it quickly loses its allicin-producing ability!

What does garlic contain?

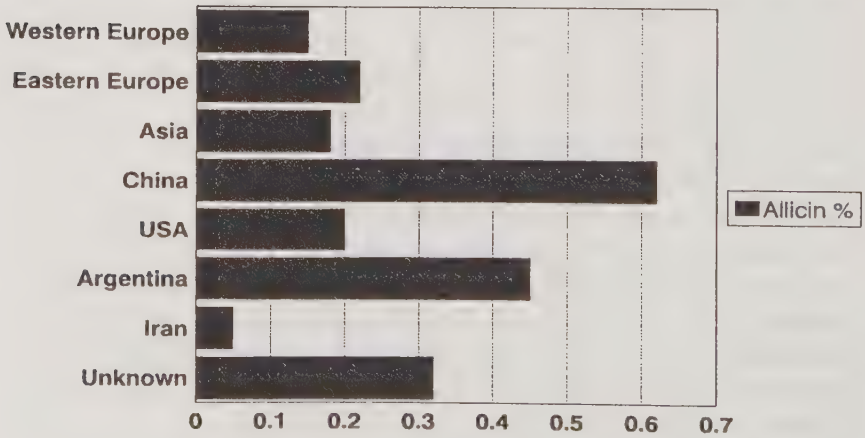
There are 17 amino acids to be found in garlic: lysine, histidine, arginine, aspartic acid, threonine, serine, glutamine, proline, glycine, alanine, cysteine, valine, methionine, isoleucine, leucine, tryptophan and phenylalanine. Garlic also contains at least 33 sulphur compounds and the minerals, germanium, calcium, copper, iron, potassium, magnesium, selenium, zinc, vitamins A, B_1, and C, fibre and water.

The chemistry of garlic

Allicin and alliin

It was in 1944 that the chemist Cavallito first isolated an unstable, odorous sulphur-containing compound with antibacterial properties from extracts of fresh garlic. He called this substance allicin, from the generic name for the plant *Allium Sativum*. In 1948 Stoll and Seebeck discovered the odourless sulphur-containing compound alliin, which is found in the garlic bulb and is enzymatically converted by allinase when the bulb is crushed.

Allicin release of various garlics from around the world



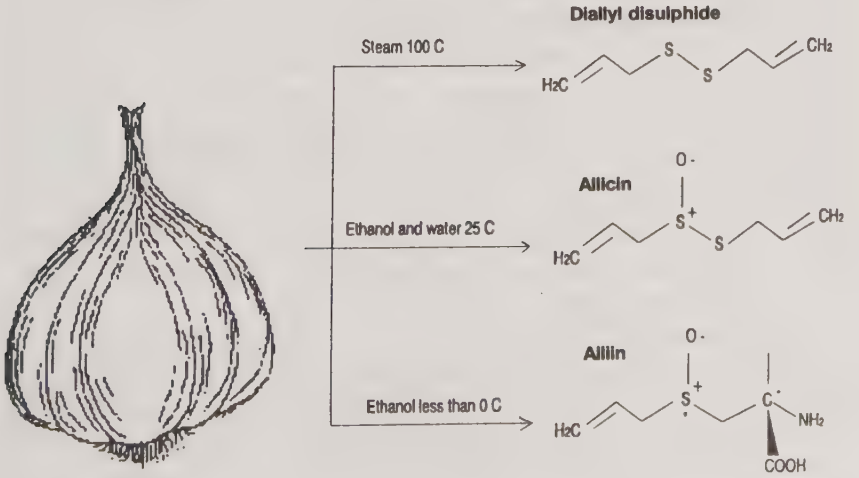
The chemistry of garlic is very complex. In all raw garlic bulbs or cloves there is a substance called ALLIIN and this is the principal

active ingredient and is a non-smelling amino acid. As soon as a raw garlic is mechanically disrupted (that is to say, by crushing or cutting) a chemical known as allinase acts upon alliin to form a polysulphide called ALLICIN. This gives garlic its characteristic odour and as allicin is unstable at room temperature it quickly forms a series of other sulphur compounds.

The alliin content of raw garlic varies by as much as tenfold and is dependent upon soil and climatic conditions. Furthermore, the specific extraction process used by manufacturers of garlic supplements determines the type of product formed. Steam distilled oils and macerates do not contain any alliin or allicin, whereas dried powder products (at least those derived from sliced garlic bulbs) are able to maintain alliin content, by carefully preserving the enzymatic activity of allinase, and thus guarantee a release of allicin.

Alliin and allicin are universally accepted as standards for qualitative evaluation of garlic and garlic products, and for standardisation of procedures in manufacture. At present, however, there are no detectable marker substances for assay in blood. Alliin can, however, be measured by gas chromatography and high pressure liquid chromatography by using synthetic alliin for calibration.

Allicin yield is determined following conversion to diallyl disulphide and therefore all commercial products can be assessed for allicin releasing ability and total sulphur content.



The difference between various types of garlic, both raw and commercial preparations, in the proportion of allicin and total sulphur compounds released is over twentyfold. Thus it is important to either buy raw garlic that is rich in alliin (this is of course both impractical and unlikely for consumers today) or to purchase a garlic supplement that has been properly standardised and has not lost the ability to produce a high allicin yield.

The same picture is true for the total sulphur content of garlic from around the world and there is wide variability in the amount of sulphur that can be generated from commercial products. Allicin is, however, only the start of the numerous compounds to be found to varying degrees in all raw garlics. Over the last 20 years many compounds that are formed from allicin as it degrades have been isolated, characterised and experimented upon. These include isomeric vinyl dithienes and a compound given the name ajoene (ah-ho ene) taken from the Spanish word for garlic, "ajo". These are known as secondary degradation products of alliin. It has been demonstrated in the laboratory that ajoene possesses, antithrombotic, antimycotic and fat depositing activities *in vitro* (in the test-tube). The leading authority in the world on garlic chemistry is Professor Block from the State University of New York, and he has determined that ajoene is not found in unprocessed garlic, nor has it ever been isolated from any commercially available garlic supplement. He suggests that ajoene is formed by the chemical reactions that take place during the digestive process from raw garlic or from processed garlic that contains its precursor allicin, that is to say, no allicin no ajoene!

Of the 200 or so other sulphur compounds that can be formed when raw garlic is cut or crushed or mechanically disrupted in any way (particularly by boiling) many have not been isolated because they are transitory in nature. Other compounds that have gained scientific interest across a wide spectrum of disease conditions have only be used in experiments on animals or on human cell models, where to see an effect the cells may often be transplanted back into host animals. (see Chapter 7, Garlic Research)

Thus allicin is categorised as the "Mother substance" from which all others flow. So raw garlic will degrade into allicin to a greater or lesser extent and then many "sons and daughters" of allicin will form, some of which may have beneficial effects on the body and some will not. (see Chapter 8, Garlic supplements)

CHAPTER THREE

Garlic as a Medicine

Garlic has been used as a medicine for thousands of years and the spectrum of conditions treated successfully with this miraculous plant is very wide indeed. Whether or not this activity against common diseases of the day was found by accident, inspiration or simple trial and error we may never know. But found it was and quickly garlic established itself as probably the most useful food/medicine in those ancient times. First used for its potent antibiotic properties, it quickly became established as a cleanser of the body, a mild diuretic, a remover of poisons and a healer of wounds and sores.

Over the centuries garlic has been used for many things, nearly always with success, and thus it has established a reputation and has been called "the herb all heal". Scientists now agree that garlic has proven activity in all of the following areas:

Pharmacological activities of garlic

Anticoagulation	– thins the blood
Antihypertensive	– reduces blood pressure
Antimicrobial	– kills microscopic organisms
Antibiotic	– kills poisonous bacteria
Antiparasitic	– kills parasites
Antimycotic	– kills fungal infections
Antiviral	– kills viruses
Hypolipidaemic	– reduces high blood cholesterol

Detoxifies heavy metals	– removes lead, mercury and other toxic material
Antitumour	– reduces or prevents cancer tumours
Vitamins	– as a food garlic provides useful vitamins
Antioxidant	– scavenges and removes dangerous free radicals
Antiageing	– delays ageing
Immune modulator	– repairs the immune system
Humoral immunity	– keeps blood circulation healthy
Fibrinolysis	– reduces blood fibrinogen
Antiplatelet	– reduces blood platelet clumping

Garlic as an anticoagulant

Garlic and several of the sulphur compounds, in particular ajoene, produced from raw garlic have been shown to help thin the blood. Some components of garlic oil preparations show significant activity in test-tube experiments and further work is underway in this important area. Further details on garlic and its effect on blood can be found in the section on Garlic and circulation.

Garlic as an antihypertensive

At least 10 well-designed studies have now been published on the effect of garlic (in tablet form) on raised blood pressure. It does appear that allicin is the active agent and therefore you must take a supplement that can guarantee a yield of this substance. Further information can be found in the section on heart disease.

Garlic as an antimicrobial

It has been known for centuries that garlic could kill microscopic organisms, in particular the amoeba responsible for dysentery. In this respect garlic is as effective as the now well-established antibiotic metronidazole. This was one of the first applications of garlic in Egyptian times where the slaves who built the Pyramids were fed a daily ration to build strength and fight disease.

Garlic as an antibiotic

Garlic is the only antibiotic that can actually kill infecting bacteria and at the same time protect the body from the poisons that are causing the infection. It is known that the most sensitive bacterium to garlic is the deadly *Bacillus anthracis* which produces the poison anthrax. Even the forefather of antibiotic medicine Louis Pasteur acknowledged garlic to be as effective as penicillin, and late studies showed similar activity to a more modern antibiotic, chloramphenicol. Even the blood of garlic eaters can kill bacteria and it is also reported that the vapour from freshly cut garlic can kill bacteria at a distance of 20 cms!! Another once common, and apparently returning disease, tuberculosis was treated with garlic very successfully, as the invading organism *Mycobacterium tuberculosis* is sensitive to several of the sulphur components found in garlic. Please see Chapter 6 for further details of garlic's ability as a natural antibiotic.

Garlic as an antiparasitic

Studies have shown that garlic can kill the deadly parasites *Entamoeba histolytica* and *Giardia lamblia.*

Garlic as an antimycotic

As the relative number of bacterial infections begins to fall and the vast range of antibiotics used to kill them continues to increase, scientists are now beginning to become concerned about the increasing number of fungal infections present today. As many modern antifungals are sold over the counter, doctors are also concerned that infections should not be masked and should be treated with an appropriate agent. Once again garlic has a long history of fighting fungal infections. Details of some modern results which now confirm this increasingly useful ability can be found in Chapter 6.

Garlic as an antiviral

In the absence of any other suitably active compound, garlic has been used as an antiviral for many years. Recently, activity has been shown against both the herpes virus and the human cytomegalovirus. See later for details of studies.

Garlic as a hypolipidaemic agent (reducing cholesterol)

Garlic has always been used to "purify the blood", and whilst the great physicians of Rome and Greece probably knew nothing about cholesterol or the role that fats (lipids) play in producing furred up arteries, they certainly knew that garlic could help to prevent blood from deteriorating!

In the last 10 years, thanks to the ability to harness the active agent in garlic and to be able to properly standardise a tablet that contains this agent. We have seen an enormous amount of studies on this humble clove to prove that garlic certainly can reduce harmful levels of cholesterol and other blood fats. More detail is available in the next chapter on heart disease.

Garlic detoxifies heavy metals

Interestingly, we have known about this feature of garlic's medicinal activities for a long time as there are many reports of garlic being used as a cleanser and to help clear poisonous metals from the blood. Recent work has centred on proving that garlic can reduce the absorption of lead by farm animals. As our population grows it becomes more difficult to find enough land to give to farmers and their livestock. We continue to pollute our atmosphere at an alarming rate. Thus it comes as a pleasant surprise that garlic is being used to ensure that chickens and other livestock do not absorb dangerous quantities of toxic metals like lead from the atmosphere. It has even been calculated that the amount of lead that WE now absorb from the atmosphere has increased a thousandfold over the last century! Clearly we should be taking a leaf out of our European colleagues and begin eating a lot more garlic!

Garlic for reducing tumours

This subject is covered in detail in Chapter 5.

Garlic as a source of vitamins

The old adage "We are what we eat" is appropriate here, and of course food consumption and the likelihood of developing disease

are inextricably linked. So the fact that garlic is one of the most nutritious foods around and that it can give us a spectrum of useful vitamins (for antioxidant effect), minerals and fibre should not be forgotten. Always eaten as a food that could both protect and enhance our abilities, what further reasons do we need to increase our consumption?

Garlic as an antioxidant

It should come as no surprise that garlic is an excellent antioxidant capable of mopping up harmful free radicals like oxygen and nitrogen. Indeed, the respected scientist, Dr David Kritchevsky at The Wistar Institute in Philadelphia, says that garlic contains no less than 15 known antioxidant chemicals, some of which definitely slow down the manufacture of cholesterol and other fats in the body. More details of recent studies showing the antioxidant capabilities of garlic can be found in the chapter on garlic research.

Garlic and antiageing

The Chinese were the first people to suggest that garlic might delay the ageing process and it is used specifically for this purpose in Traditional Chinese Medicine. Linked in with improved circulation and removal of body toxins, I can't imagine a leading manufacturer of antiwrinkle and antiageing creams wanting to utilise garlic in this way! The lesson to learn from all this may be to eat more garlic as it is undoubtedly good for us!

Garlic as an immune modulator

It will probably be of no surprise to the reader to hear that garlic has been thought to be good for our immune systems for hundreds of years because of all its beneficial effects on our circulation. Obviously our bodies are fitter and more easily able to cope with attack from all manner of organisms.

Garlic and humoral immunity, fibrinolysis and antiplatelet activity

Following on from the general immune system, garlic is well-known to increase fibrinolytic activity, increase the speed at which blood

flows around our system and make blood less likely to clot. All these factors have only recently been accepted as risk factors for coronary artery disease. For further details please see the section on Garlic and circulation.

An impressive list indeed, to which soon we may be able to add a number of other interesting and exciting probabilities, some of which are detailed later in the chapter on garlic research.

Amongst that long list are several clues as to the more modern aspects of garlic and its use as both a preventative and for treatment of two modern day killer diseases. Coronary Heart Disease and Cancer are the two diseases which account for over 60 per cent of ALL deaths in the Western World. In the UK alone, heart disease kills one in three of all British males and one in four of all British women. Although, since the late 1970s the number of deaths attributed to coronary heart disease has fallen – but not far enough yet. Cancer, in all its disguises also kills thousands of people every year. We shall see later in this book that garlic is well-known to help our immune systems cope with many modern day poisons and equally it is now known that garlic can positively reduce several major risk factors for coronary heart disease.

CHAPTER FOUR

Garlic and Heart Disease

A modern day epidemic

In 1969 the executive board of the World Health Organization reported that "Coronary heart disease has reached enormous proportions, striking more and more at younger subjects. It will result in coming years in the greatest epidemic mankind has faced unless we are able to reverse this trend by concentrated research into its cause and prevention".

Coronary heart disease is the biggest killer in the developed world and the most common cause of death in the UK. Upon examination of the league table of deaths from coronary heart disease (CHD) in different countries, Scotland and Northern Ireland come at the top, only surpassed in the total number of deaths by Finland. In England and Wales there has been a reduction in deaths over recent years but much work still needs to be done.

In the UK alone, around 170,000 people die from a heart attack every year – that's nearly 500 a day. Together with the fact that we now have over 2 million angina sufferers and approximately 20 per cent of the adult population has high blood pressure, and the majority of our entire population has a raised level of blood cholesterol. The level of obesity continues to grow, our average amount of useful exercise continues to shrink, the incidence of sugar diabetes continues to rise and our national diet is derided almost every day in the press and media! Thus you begin to see that we have a lot of work to do to reduce the terrible burden this disease puts upon our society.

Risk factors

The major risk factors for coronary heart disease are well-known:

- ☐ increasing age
- ☐ eating too much saturated fat
- ☐ having a family history of heart disease
- ☐ being a male (or a post-menopausal female)
- ☐ poorly controlled insulin diabetes
- ☐ drinking excessive amounts of alcohol
- ☐ high stress levels
- ☐ uncontrolled high blood pressure
- ☐ raised blood fat levels
- ☐ smoking cigarettes
- ☐ being overweight or obese
- ☐ insufficient exercise

Of course some of these risk factors we can do nothing about, and some are either very difficult to change or seemingly impossible to live without! Some, however, we CAN help by making a few simple alterations to our lifestyle – the first step is to start taking garlic!

Why are garlic eaters healthier?

We now know from long-term epidemiological studies (population studies where the characteristics of an entire population are scrutinised in considerable detail) that the incidence of coronary heart disease is lowest where the most garlic is eaten. The French, Italians, Greeks, Spanish, and the population of Asia and China all have much lower rates of coronary heart disease, and all eat much more garlic than we do in the UK (or America for that matter).

Whilst this is not the complete picture, let us just look at one particular study that looked at three groups of vegetarians called the Jains from India. Three groups of diet-matched subjects were investigated and were categorised as follows: Group 1 ate more than 50g

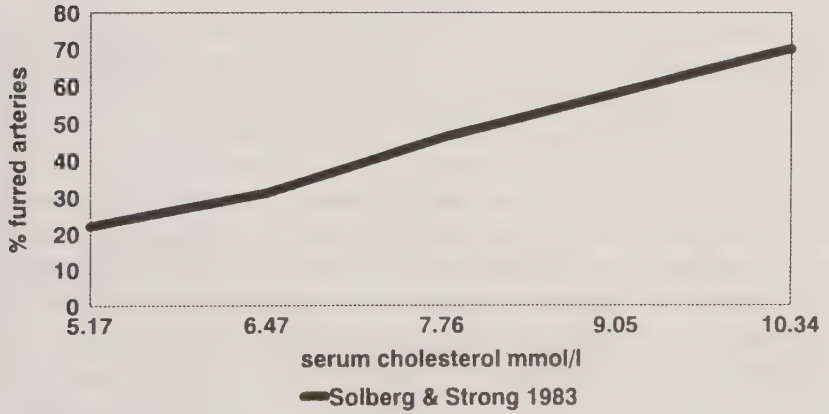
of garlic and onion per week in their diets and had done so consistently; Group 2 who ate no more than 10g of garlic and onion per week and, Group 3 who were forbidden to eat garlic or onion on religious grounds. When an analysis of their blood cholesterols was made Group 1 (lots of garlic) had the lowest cholesterol levels at 4.2 mmol/l. Group 2 (moderate levels of garlic) had moderate levels of cholesterol at 4.5 mmol/l and, Group 3 (ate no garlic) had the highest levels of cholesterol at 54 mmol/l.

Several other possibilities exist as to the healthiness of garlic eaters and these are covered in each of the following sections.

Garlic and cholesterol

It is now known and accepted the world over that, an increased cholesterol level raises your risk of developing heart disease. A raised cholesterol is therefore another major risk factor for the

Relationship between cholesterol level and furred up arteries



development of coronary heart disease. There are two types of circulating cholesterol, one which is protective and the other which is known to cause CHD. Blood fats or lipids as they are often known are carried around our bodies by carriers known as lipoproteins. The

helpful cholesterol is known as HDL or high density lipoprotein which is a large molecule. The other type of cholesterol is harmful and that is LDL or low density lipoprotein which is a much smaller molecule.

Usually LDL cholesterol can become oxidised and this leads to the deposition of harmful fats into the coronary arteries surrounding the heart. It is this build up of fat that can lead to a narrowing of the important coronary arteries. This can then lead to a heart attack, where blood flow is stopped or a stroke where a blood clot is dislodged and travels to the heart or brain.

Clearly then, anything that we can do to reduce the levels of this harmful fat in our system will relieve the pressure on our heart and circulatory system.

There are now many well-designed studies published around the world that confirm that raw garlic or garlic powder tablets can reduce cholesterol. Most recently, researchers in Oxford and America have published summaries of all the scientifically and medically approved data on garlic.

Garlic as a lipid lowering agent
Silagy CS, Neil HAW. 1994 The Journal of The Royal College of Physicians Vol 28 No 1:39-45

The authors of this important review state that garlic supplements have an important part to play in the treatment of high cholesterol, and that this paper reviews all the published and unpublished data from around the world. Overall a 12 per cent reduction in total cholesterol was shown, this reduction was normally evident after only 4 weeks treatment, and would persist for as long as the study was in progress. In the dried garlic tablet studies (Kwai or Kwai Once A Day) there was no significant difference between a dose of 600mg to 900mg daily. Dried garlic powder tablets also significantly lowered triglycerides (another potentially harmful blood fat). Although garlic oil products (not commercially available) also reduced cholesterol the range of effect was so wide that the researchers discounted the results as "meaningless". It was also shown that consuming large quantities of raw garlic also reduced cholesterol although there were very few studies that were included in this reveiw.

The authors summarised by saying: "Garlic in powder or non-

powder form, can significantly lower serum lipids over a one- to three-month period. Adverse effects, including odour, appear to be relatively uncommon particularly with the standardised powder preparations." Although some of the studies were thought to be poorly designed this effect was substantially greater than that seen with other non-drug approaches such as dietary advice or oat products.

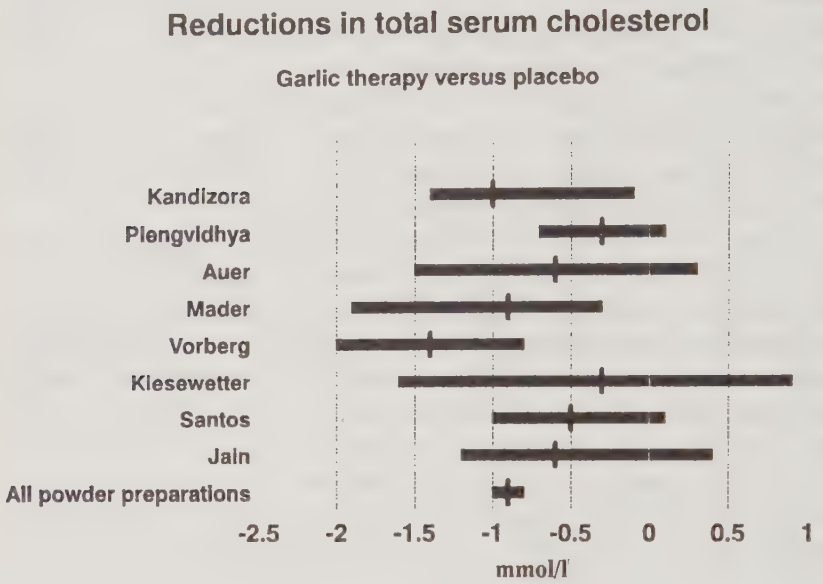
This is the largest review of data published on garlic and cholesterol reduction ever carried out. Only large studies that were, in the author's opinion, properly conducted were included and many other studies, whose results all showed good reductions in cholesterol were not included in this analysis.

A summary of the results of a number of investigations on garlic and its effect on total cholesterol is shown in the graph. You can see that whilst the effects are not particularly large they do ALL point in the same direction, and that is towards a reduction in cholesterol with garlic when compared with a placebo. Overall researchers have said that garlic can be expected to reduce cholesterol by about 12 per cent compared to a placebo. Doctors suggest that raw garlic that is rich in allicin and a number of garlic preparations, particularly tablets, can reduce cholesterol by at least 10 per cent. Several studies have been performed on garlic oils and results have been encouraging, however, the dosages used were way above those that are recommended by manufacturers and the spread of results (that is to say, good and bad) was so wide that further work on these compounds needs to be done to confirm an effect if one exists.

Effect of garlic on total serum cholesterol
Warshafsky S; Kamer RS; Sivak SL. Department of Medicine, New York Medical College, Ann-Intern-Med. 1993 Oct 1; 119(7 Pt 1): 599-605

This again is an important review of data that was felt to be of such good quality that this prestigious medical journal published the results in 1993. An assessment was made of the size and consistency of garlic's effect on total serum cholesterol in persons with cholesterol levels greater than 5.17 mmol/l (200 mg/dl). An overall reduction of 0.59 mmol/l (23 mg/dl) was attributable to garlic. The best available evidence suggests that garlic, in an amount approximating one clove (of high allicin-yielding garlic) per day, decreased total

serum cholesterol levels by about nine per cent in the groups of patients studied.



Another interesting study was published recently in Germany which looked at what happens to the fat we all absorb from the food we eat. Whether the introduction of garlic would make any difference to the amount of fat absorbed, and the distribution of this fat once it entered our body. Volunteers were sought who were prepared to eat a fat-laden breakfast for a period of 42 days. I wish I had known about this study as I would certainly have put my hand up! Anyway, they were split into two groups, one took garlic tablets with every fatty meal and the other group took a placebo tablet (of course neither they nor the investigators knew what they were taking). Their progress was monitored closely over the study period and the results showed that volunteers taking the garlic tablets actually absorbed 35 per cent less fat than those taking a placebo!

So then, overall, we can now state confidently that garlic can reduce cholesterol by significant amounts in many people and will probably

help to reduce the amount of saturated fat absorbed in to our bodies. Of course there is always a need for more information and more studies on newer forms of garlic, or on older ones that haven't yet proved their worth. It is also very good news to learn that these effects can be gained by simply adding good quality garlic to our diets. What we need is a focused education programme to bring home the numerous benefits of adding a little more garlic in to our lives!

Of course there will always be people who for one reason or another will need to take medication to reduce their cholesterol levels. I am not suggesting that garlic is a panacea, indeed it is not ever going to be as effective as some of the prescription medications that are currently available to reduce cholesterol. However, researchers are always keen to compare effects of various alternatives in this kind of treatment since the patient will have to take medication for the rest of their life. It is therefore important to have a choice and preferably a number of safe non-drug measures will be tried extensively before a patient is prescribed a specific lipid-lowering drug.

How does garlic compare with prescription medication?

With the sheer volume of work being conducted on garlic and cholesterol lowering, it is not surprising that doctors began to wonder how garlic compared with the prescription medicines that they were currently prescribing. So a group of researchers decided to compare garlic, in tablet form, with the Gold Standard prescription lipid-lowering drug called bezafibrate. The compound was then, in 1992, and still is today the most heavily prescribed drug for reducing cholesterol in the world – a tough nut to crack!

So a comparison was made between garlic and bezafibrate. Doctors looked at the ability to lower "bad" LDL cholesterol and triglycerides and also the effect seen on the beneficial or "good" HDL cholesterol. The results were astounding! Garlic was just as effective as bezafibrate on all counts. Both products lowered total cholesterol and LDL cholesterol, and both were able to increase significantly the amount of protective HDL cholesterol in the 98 patients who took part in the study. Since this excellent result, this particular study has

been reviewed to check its method of design and has scored maximum points on all counts. It can therefore be regarded as a true testament to the effectiveness of garlic. Is it any surprise that garlic tablets are the largest selling over the counter self-medication in Europe!

Garlic and blood circulation

Accumulating evidence suggests that garlic and garlic supplements may help to improve several parts of your circulation. By making your blood less likely to clot, garlic can reduce blood platelet aggregation. This means that your blood will become slightly thinner and is less likely to form a clot since the platelets are prevented from sticking together. It has also been reported that garlic will reduce blood thickening. In one study that looked at capillary blood flow in the nail folds of the hand, garlic increased blood flow by 55 per cent. In patients who had peripheral arterial occlusive disease (furred up arteries particularly in the legs), garlic tablets slightly improved the walking distance for these patients. This is really good news for the elderly of our population, since they tend to suffer quite often from varicose veins and poor circulation, particularly in the legs.

Sometimes people have circulation defects to almost all of their body and this is called Raynaud's Syndrome. Often those people affected have to wear gloves even in the warm balmy days of autumn and certainly as the weather begins to cool. Garlic is universally accepted as being able to improve your circulation, and studies show that as soon as you eat a clove of garlic your blood immediately thins and becomes more mobile. It will return to normal within about three hours once the active metabolites in garlic have done their work and been excreted. But which ones are the most active? For some time now it does seem that many of the breakdown sulphur compounds from raw garlic (found in large quantities in some garlic supplements, both oils and tablets) do have beneficial effects on blood and circulation. However, more research needs to be done and then perhaps an anticlotting drug based on a component of garlic will be synthesised! Until then I suggest we carry on enjoying a daily ration of garlic!

One recent review of garlic's capabilities was performed in Germany. This study was double-blind placebo-controlled which means that neither the patient nor the investigator knew what the patient

was taking (that is to say, either garlic tablets or a dummy tablet that looked exactly the same). Spontaneous thrombocyte aggregation disappeared (that is to say, blood stopped sticking together), microcirculation to the skin increased by 47 per cent, blood pressure and blood glucose levels were also decreased in the patients taking garlic.

Looking back through history the first reports on garlic used as a medicine were to help purify the circulation and improve strength. Logically any improvement in the characteristics of your circulating blood are going to be beneficial. So it is no surprise that this is an area which has attracted a lot of attention amongst medical researchers and university scientists. This has led not only to a better understanding of how our circulation and blood is controlled, but also what can go wrong and which elements in garlic are the most active.

When garlic cloves are chopped or crushed several sulphur compounds are rapidly formed by the action of the enzyme allinase on the amino acid alliin. Allicin is the dominant sulphur compound released. A variety of sulphur-containing compounds are formed from allicin depending on the way in which garlic is handled. One such compound identified recently and mentioned earlier in this book is ajoene which has been reported to possess antithrombotic properties. Recent studies have provided data on the antiplatelet properties of ajoene. It was found that ajoene could inhibit platelet aggregation and the nature of the inhibition was irreversible. The results suggest that ajoene shows a significant antiplatelet effect which means that it can stop blood from becoming sticky and thickening to prevent it from sticking together or clotting.

Garlic and blood pressure

High blood pressure is described as a "silent killer" as it can creep up on you and strike without causing symptoms to trigger a sudden heart attack or stroke. Even if your blood pressure is very high, you may feel relatively well without showing any obvious signs or symptoms. Some people with high blood pressure may feel dizzy and develop a headache. It is therefore important to ensure that levels are kept as near to normal as possible. Blood pressure varies considerably throughout the day as a result of both physical activity and stress. Usually your blood pressure is at its lowest in the middle

of the night and tends to rise to a peak at about 11am. Physical exercise will cause a temporary rise in blood pressure, which is entirely normal but people with hypertension will have high blood pressure readings even while resting. Risk factors that increase the risk of developing high blood pressure are similar to those linked to coronary heart disease and include: increasing age, smoking cigarettes, obesity, excess alcohol intake, a family history of heart disease, lack of exercise and high stress levels.

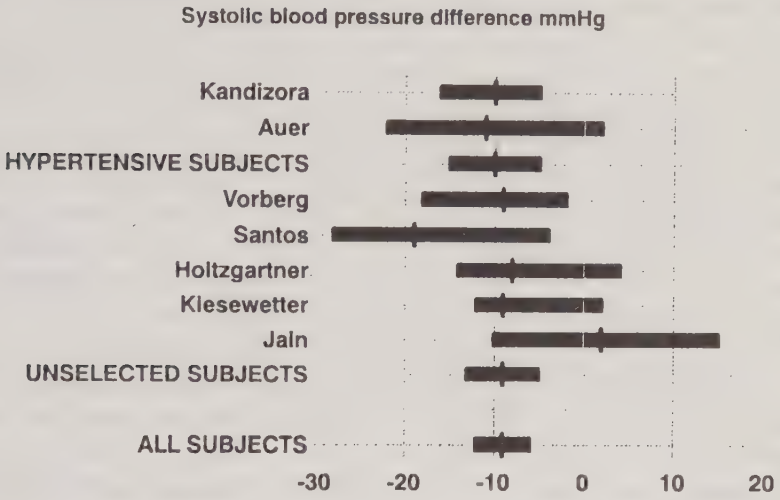
It is estimated by medical experts that by reducing your diastolic blood pressure (the pressure in the system when the heart relaxes between beats) by as little as 5 mmHg would decrease the risk of developing coronary heart disease by a massive 16 per cent – garlic can do much more than this!

There are many prescription drugs available to reduce blood pressure and whilst they are very effective they can cause side-effects in some people. Garlic, in certain forms, has now been shown to significantly reduce both systolic and diastolic blood pressure. Only recently the prestigious medical journal – *The Journal of Hypertension* reported that garlic powder tablets could reduce systolic blood pressure by 10 per cent and diastolic blood pressure by 6 per cent. The journal went on to say that the potential blood pressure-lowering effect of this natural plant medicine was of such significance

"that stroke may be reduced by 30 to 40 per cent and coronary heart disease by 20 to 25 per cent".

The authors, Professor Christopher Silagy and Dr Andrew Neil, working at The Radcliffe Hospital in Oxford, looked at all the published data on garlic and blood pressure and conducted a review using strict guidelines to only include studies that were properly designed and conducted. Overall, 415 subjects had been studied and they had all been treated with the same powdered garlic tablets (Kwai). The results showed that both systolic and diastolic blood pressure were significantly reduced. The authors concluded that this would mean that the incidence of stroke may be reduced by 30 to 40 per cent and coronary heart disease by 20 to 25 per cent by taking garlic regularly.

Effect of Garlic Powder Therapy versus Placebo



An analysis from the *Journal of Hypertension* 1994, 12:464-468

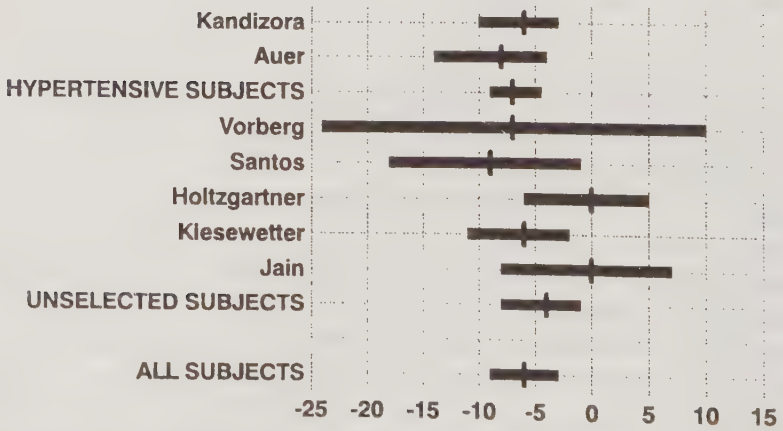
This graph shows a summary of the majority of well-designed studies published on garlic and systolic blood pressure. You can see that when researchers deliberately targeted patients with established blood pressure problems the overall reductions were highly significant and approaching a 11 per cent reduction. Even when patients were entered into a study to look at other problems (usually elevated cholesterol), garlic was able to again significantly reduce blood pressure by nearly 10 per cent.

The first British study published in 1993 was performed by Dr Osmar Santos in Bromsgrove, Birmingham. He is a long-term devotee of garlic and knew from first hand experience in Portugal, Russia and Brazil just how effective garlic could be for treating many medical conditions. He decided to test the effectiveness of garlic as a treatment for raised cholesterol and blood pressure under strict experimental conditions. Patients were not told whether they were taking garlic tablets (Kwai Original) or a dummy (placebo) tablet and the investigators did not know either. The results showed that over

the six months that the study lasted, those patients taking the garlic tablets reduced their systolic blood pressure by 19 per cent and diastolic blood pressure was reduced by 11 per cent. As a part of this study patients were asked to give an assessment of how they felt, healthwise, before, during and after the study finished. Interestingly, many of the patients who had been taking garlic tablets reported that they felt very good by the end of the study, whereas the patients taking a placebo did not feel much different! This must be the first time that something was given to patients with a serious medical condition that not only dealt with the problem but also made them feel much better! Currently there are no double-blind placebo-controlled studies published involving a garlic oil preparation.

Medical researchers in America decided to test garlic and designed a study where a single large dose of garlic powder was given to patients with high blood pressure. The pressure was then monitored every hour over the next day and not surprisingly their pressures were significantly reduced but increased again after the garlic had stopped working.

Effect of Garlic Powder Therapy versus Placebo



An analysis from the *Journal of Hypertension* 1994, 12:464-468

This graph shows a summary of the majority of good studies published on garlic and diastolic blood pressure. You can see that once again when researchers deliberately targeted patients with established blood pressure problems the overall reductions were highly significant at around seven per cent. Even when patients were entered into a study to look at other problems (usually elevated cholesterol), garlic was able to again significantly reduce blood pressure. Such that overall you can expect to reduce diastolic blood pressure by at least six per cent – all without the side-effects of drug treatment which can range from insomnia, headaches, nausea, impotence to nightmares and confusion.

Applying these results to the general population (and remember patients selected for these studies were just a part of the norm as well) you could expect to reduce the incidence of coronary heart disease by 25 per cent which could mean 45,000 lives saved each and every year by garlic!

Similarly, groups of researchers around the world have shown that blood pressure can be significantly reduced by giving patients garlic in powder form. The Professional Association of German General Practitioners have conducted a number of studies all showing similar results. In one assessment the average diastolic blood pressure fell from 102 mmHg to a safe level of 89 mmHg over the treatment period of 12 weeks. Taking the above studies into consideration, there is no doubt that garlic is indeed good for us.

How does garlic work?

The mechanism of garlic's action on blood pressure is not fully understood, however, it does appear to act as a vasodilator. Studies suggest that garlic may exert its ability to lower blood pressure by acting like prostaglandin E_1, which decreases peripheral vascular resistance. What is clear is that to get any significant effect you must be able to get the active ingredient allicin released in to your system. Most garlic oil, capsule and pearl preparations are not able to provide any allicin and they have no research studies looking at blood pressure effects.

In the UK a further study has looked at how a popular garlic oil product (with little or no allicin available) compares with a garlic powder product (which guarantees a high allicin yield). In the study

group of 80 patients there was no effect on blood pressure in patients taking garlic oil but those patients taking garlic powder (in tablet form) showed a significant reduction in both systolic and diastolic blood pressure. The authors conclude that allicin seems to play an essential role in the mode of action of garlic when used to treat raised blood pressure and, that compounds that can supply this agent are always likely to be more effective than those who cannot.

An important point to note

I am duty-bound to point out that ALL the studies conducted on garlic and blood pressure that are mentioned above were performed using the same commercially available product – Kwai garlic tablets. The reason for this is that this particular product is fully standardised and is guaranteed to give a high yield of allicin, garlic's active ingredient. This means that the product is very much like a drug in that there is an active compound and as such it can therefore be tested to see if there is any clinical effect. At this moment in time there are no other studies which bear scientific scrutiny for any other type of garlic supplement.

Can garlic prevent a stroke or heart attack?

The answer to this is almost certainly yes! There are not currently any long-term studies looking at survival rates from coronary heart disease in patients treated with garlic, work is in progress (see Chapter 7). However, there is evidence that garlic definitely reduces the risk of a second heart attack and this has been known for many years. Studies in India have shown that by giving garlic juice to patients who have suffered a heart attack, over a three-year period the incidence of recurrent attacks (against a control group) was reduced by 32 per cent, and the total number of deaths was significantly reduced by 45 per cent in the group taking garlic regularly. Further reports have been published in America that show similar findings.

Garlic and diabetes

Diabetics are a group of people who have an increased risk of developing many diseases including heart disease. Indeed it is

estimated by experts that a diabetic may have three times the relative risk of developing coronary artery disease as a normal individual. However, many diabetics are only too well aware of this increased risk and tend not to go to excess in most things. As the author of this book I am also an insulin-dependent diabetic of long-standing (over 25 years) and so it was of particular interest and pleasure, as I am a garlic fan too, when the first real data was produced in diabetics that showed garlic could be of some help in controlling one or more coronary risk factors.

It has been reported that garlic will either reduce blood sugar levels or not have any effect on them. In a recent study investigators found an 11 per cent reduction in blood glucose in the garlic treated group and no effect in the placebo group. Whether garlic can increase insulin secretion is unclear. However, a recent study (conducted at The Royal United Hospital Bath and The Royal South Hampshire Hospital in Southampton) has shown that garlic tablets can have a beneficial effect on blood lipids. A presentation of this work was made at a major medical cardiovascular disease prevention meeting held in London in 1994. I quote from the abstract:

Garlic, lipids and diabetes

Reckless J , Lloyd C , Stirling C , Mansell P , Leatherdale B. Royal United Hospital Bath UK and Royal South Hampshire Hospital Southampton UK (Presented at Cardiovascular Disease Prevention II : 19-22nd July 1994 London UK)

Dried garlic tablets reduce serum cholesterol and triglycerides in hyperlipidaemic, non-diabetic subjects but there have been no such studies in diabetic patients.

We studied 60 stable, non-insulin taking patients aged 42-75 years with a serum cholesterol >6.0 mmol/l (231 mg/dl) on screening. The patients were randomised to receive either 3 × 300 mg dried garlic (Kwai) tablets or placebo daily for 12 weeks. Serum cholesterol fell from 6.51 mmol/l (251 mg/dl) to 6.21 mmol/l (239 mg/dl) with garlic at 6 weeks ($P<0.02$ vs placebo) but the difference was not sustained at 12 weeks. However, the LDL/HDL cholesterol ratio fell from 5.38 mmol/l (207 mg/dl) to 4.45 mmol/l (171 mg/dl) at 6 weeks ($P<0.02$ vs placebo) and to 4.2 mmol/l (162 mg/dl) at 12 weeks

($P<0.05$ vs placebo). Garlic did not significantly affect fasting serum triglycerides, plasma glucose or HbA1 (a measure of the proportion of sugar bound to haemoglobin).

The authors conclude that dried garlic tablets have a beneficial effect on serum lipids in hyperlipidaemic non-insulin taking diabetic patients.

Thus garlic is definitely good for diabetics, particularly those on dietary and tablet treatment. As garlic also has positive benefits on other cardiovascular risk factors including blood pressure, cholesterol and circulation problems – all of which are more common in diabetics – it would seem sensible to supplement your diet with garlic.

Please note: LDL is low density lipoprotein or "bad" cholesterol and HDL is high density lipoprotein or "good" cholesterol.

CHAPTER FIVE

Garlic and Cancer

It is estimated that one in three people will develop a type of cancer at some time in their life and that cancer continues to account for around 25 per cent of deaths recorded each year. The causes are numerous and varied and whilst only recognised as a separate disease this century, physicians have been diagnosing and treating "tumours" for thousands of years. Traditional Chinese medicine has always used garlic as a part of any treatment for the patients who suffered from a tumour or cancer. The search for compounds that prevent cancer has intensified with the mounting evidence that many types of cancer are caused or triggered by factors relating to lifestyle and environment. It is well-known that garlic can strengthen the immune system which is vitally important for fighting cancer.

When I reviewed this important area of medicine I was surprised and pleased to find a considerable amount of data already published to show that eating garlic regularly can confer some degree of protection against various stomach cancers. Interestingly, the medical community have known about this for years and are currently trying to find out which compounds from garlic are the most protective and which could be utilised as a possible treatment. In the UK our leading specialist cancer journal *The British Journal of Cancer* recently conducted a critical review on garlic and its significance for the prevention of cancer in humans. They found that recently published results of population studies showed that consuming garlic may reduce the risk of gastric cancer. Chemical constituents of garlic have been tested for their inhibiting effect on cancer cells.

In most experiments inhibition of tumour growth was established using fresh garlic extract, garlic compounds or synthetically prepared analogues. They concluded that evidence from laboratory experiments and population surveys is presently not conclusive as to the preventive activity of garlic. However, they also indicated that the available evidence warrants further research into the possible role of garlic in the prevention of cancer in humans. Now rather than come out and say to the press and media "we think it's a good idea for EVERYONE to eat more garlic because it can prevent some cancers", they decided to go away and try to see if any particular compound formed from garlic was better than the whole!

Studies have been published in China, USA and Europe providing a lot of information on the role of garlic in cancer. Research is currently underway in most countries to isolate which particular compounds, after allicin, are most active. Recently, researchers in Pennsylvania have shown that by injecting a compound called diallyl disulphide (formed when raw garlic is cut or crushed) that tumours can be reduced by half and that a further compound (S-allyl-cysteine) can stop cancer-causing agents from binding to human breast cells. Common garlic powder also blocks both the formation of powerful carcinogens and their binding to these cells thus keeping the cells from becoming cancerous.

The finding by scientists in Pennsylvania State's College of Health and Human Development shows how common garlic powder could be used in preparations to prevent chemically-induced cancers.

"Garlic powder prevented the formation of compounds, such as N-nitrosamines, recognised as cancer-causing," says Dr. John Milner, Professor and head of the State's Department of Nutrition.

Nitrosamines are formed from nitrates that occur in the environment, including the foods and beverages we consume. In the body, nitrates are converted to nitrites, which link with other compounds to form potent carcinogens. These carcinogens are linked to cancer at various sites in the body, particularly in the stomach.

Reporting in the journal *Carcinogenesis*, Milner, Xi-Yun Lin, who is Professor of Nutrition from China's Shandong Medical University, and doctoral student Jin-Zhou Liu describe how adding garlic powder to the diets of rats blocks the formation and action of several N-nitroso compounds.

The findings support a growing body of evidence that garlic works as an anticarcinogen in both prevention and treatment, and that garlic and related foods play an important dietary role in the cancer process. For instance, scientists have correlated garlic intake with reduced nitrite levels in people and fewer deaths from stomach cancer are recorded.

Garlic powder's ability to inhibit nitrosamine compounds is likely to be associated with the water-soluble, sulphur substances found in processed garlic. This makes the substances key ingredients in preparations to prevent chemically-induced cancers.

Currently it is unknown specifically how garlic protects, but it may relate to blocking formation of cancer-causing compounds, stopping their ability to form tumours or even inhibiting the growth of tumour cells.

This follows on from work conducted by Professor Michael Wargovich at the University of Texas where his group studied the effects of two major purified components of garlic diallyl disulphide which is soluble in oil and S-allyl-cysteine which is water-soluble. He tested these compounds on two animal carcinoma models and found that the tumours could be reduced by between 50 and 75 per cent. Then in his controls (used to remove any experimental bias) he gave a prophylactic dose of garlic and then deliberately tried to induce a particularly virulent form of oesophageal cancer. He found that garlic completely prevented his experimental controls from becoming infected. His conclusion was that although the precise mechanism may not be clear, his results had shown that the administration of well-tolerated garlic products may confer important protection from cancer.

A drawback of these elements of raw garlic is that because they are lipid-soluble, they break down when heated. If you smell garlic cooking in your kitchen, you've destroyed a lot of the compounds that may be cancer-preventive. Because people are hesitant to eat a lot of raw garlic, Professor Wargovich's laboratory investigated some of its water-soluble components, which persist during limited heating and are far less smelly.

How does garlic work?

The key to garlic's effectiveness in these experiments may not lie in

its direct effects on the colon and oesophagus, but rather in preliminary biochemical reactions in the liver. Evidence suggests that garlic affects two liver enzyme systems that could be responsible for the anticarcinogenic effects.

Garlic as a cancer preventative

Although there is only a little evidence so far to show that garlic can treat cancerous tissues, researchers are now showing that garlic does have a major preventative role to play. Only recently the prestigious *American Journal of Epidemiology* published the results of the Iowa Women's Health Study, which looked at the pattern of consumption of vegetables and fruit, and compared this with the reported incidence of colon cancer. Previous population studies have shown an inverse association between vegetable and fruit consumption and colon cancer risk; few of these studies have focused on women. This report describes results from a large study of 41,837 women aged 55 to 69 years who completed a 127-item food frequency questionnaire in 1986 and were monitored for cancer incidence for 5 years via the State Health Registry of Iowa. After specific exclusion criteria were applied, 212 colon cancer cases and 167,447 person-years were available for analysis. These are the sort of large numbers that medical researchers and statisticians like to see as it can remove elements of doubt that can occur with smaller population surveys. Consumption of garlic was inversely associated with the risk of developing colon cancer. In other words the more garlic eaten the less your risk of developing colon cancer. Associations for the other vegetable and fruit groups were not so clear-cut. There is now a movement in America to try to place garlic on to the recommended list of foods for national consumption!

One other observation is worth recalling here with regard to garlic as a preventative against cancer. In the People's Republic of China, Dr Mei Xing of the Shandon Medical College observed that the people of Gangshan County had stomach cancer rates of 3.5 per 100,000 people. In the neighbouring Qixia County, the rate of stomach cancer was over 10 times higher, approaching 40 per 100,000 people. The only cultural and lifestyle difference was that those resident in Gangshan County ate on average six cloves of garlic every day. Those from Qixia did not eat any at all.

Other forms of cancer are also being looked at and not surprisingly early results are encouraging. Skin cancer in particular is attracting a lot of attention, as the Earth's ozone levels are depleted we are constantly being reminded that the sunshine, which many of us crave, is actually rather dangerous. I still find it amazing that UK weather forecasters now give the maximum times that we should spend out in the sunshine! However, garlic is now once again being shown to be helpful in treating various skin cancers, although it is still very early days and we have not yet seen a large study to confirm these reports. Interestingly, some people even advocate rubbing raw crushed garlic over the exposed skin as a type of protectant against the sun's damaging rays – but please beware this has not been proven so cover up before you lie out in the sun.

Common garlic powder and concentrated garlic oil now joins Vitamin C as a dietary component that blocks the formation of nitrosamine compounds and inhibits their binding to cells. Extensive research world-wide supports diet as an important modifier of the development and spread of cancer. At this time, it's impossible to predict how much garlic people need to reduce their cancer risk, but overall, greater attention must be given to diet as a simple method to reduce cancer risk. So whilst there are not yet any definitive studies to show that garlic in various forms can treat cancer, we do know, and it is universally accepted, that taking garlic as a preventative does reduce the risk of developing certain stomach cancers. Cancer research is taking place all over the world, and almost without exception one of the compounds being tested in leading medical research centres and university laboratories is garlic.

CHAPTER SIX

Garlic and Infections

Garlic for coughs and colds

Garlic has a long history as an antibacterial and antiviral agent and is often referred to as Nature's original remedy. It can improve resistance to viral infections and can destroy common bugs such as *listeria* and *Salmonella* which cause food poisoning.

Preventing colds

Probably best used in its raw form, particularly if you have a sore throat or feel a cold coming on. One of the easiest ways to use raw garlic is to put two cloves (the small pieces contained within a bulb) of crushed garlic into honey or syrup and then take 1 tablespoonful twice a day. There is very little evidence to prove garlic works but perhaps it is due to the fact that garlic is very potent and will induce sweating which in turn will cleanse and cool the patient and thus aid the healing process. For preventing colds take a single large dose of your garlic supplement – for example, 10 capsules or 10 tablets in one dose!! – (less if you are taking the once-a-day tablets). You may smell for several hours but people say it stops a cold! Most recently garlic has been shown to be effective against *Candida albicans* when taken raw or in tablet form. Some garlic products are licensed for the treatment of coughs and colds, so remember to look on the box and always follow the manufacturer,s recommendations.

Preventing coughs

Garlic is known all over the world as a remedy for chest complaints, especially troublesome and persistent coughs. Laboratory studies have been carried out but there is very little published information – but this does include some work performed on children in Poland where cases of recurrent catarrh and chronic bronchitis were alleviated by taking raw garlic – there are, however, lots of anecdotal success stories! Try gargling with garlic juice.

As an aid to digestion

Used extensively in both World Wars, garlic is well-known for helping people with dysentery and other harmful bacteria found in the stomach. Garlic can remove various poisons secreted by bacteria, particularly *Escherichia Coli* which can cause stomach upsets. Interestingly garlic is the only antibiotic, which at the same time as killing bacteria, also encourages digestion and protects the body against poisons produced by the infection.

Garlic as an antibiotic

One of the first recorded uses of garlic was as a natural antibiotic to prevent and treat stomach conditions caused by infecting organisms. The amazing versatility of garlic is best reflected by its antiviral, antifungal, antiprotozoan, antiparasitic, and antibacterial activity. Allicin and other sulphur compounds are thought to be the major antimicrobial factors in garlic. Some studies have shown that ajoene, the factor responsible for anticoagulation in garlic, was superior to allicin in antifungal activity against *Candida albicans* and *Aspergillus niger*. However, more recently, studies in Germany have proved that garlic tablets that provide a high yield of allicin are able to completely inhibit growth of *Candida albicans* at relatively low concentrations (equivalent to a commercially available dose). Garlic is effective against a number of gram-negative, gram-positive, and acid-fast bacteria, including *Staphylococcus, Salmonella, Vibrio, Mycobacteria,* and *Proteus* species. Similarly, activity has been demonstrated against recurrent pyogenic, salmonella, and mycobacterium infections that are seen frequently in AIDS.

Some of the fungi that are susceptible to garlic include *Coccidioides, Aspergillus, Histoplasma, Trichophyton, Candida,* and *Cryptococci*. Cryptococcal meningitis, which is the number one cause of death in paediatric AIDS patients in Africa, has been treated successfully in China with garlic. Any effective therapy for AIDS must penetrate the blood-brain barrier to inhibit or destroy the human immunodeficiency virus (HIV) and other associated opportunistic microbes that cause serious central nervous system disease. The most common fungal infection of adult AIDS patients in America is candidiasis of the mouth, throat, and oesophagus. Candidal organisms are very sensitive to garlic. Garlic was used by Dr Albert Schweitzer to treat amoebic dysentery in Africans. Protozoal infections are responsible for many deaths amongst AIDS and AIDS-related complex patients. Offending organisms include *Isospora, Cryptosporidia, Pneumocystis,* and *Toxoplasma*. Currently, drugs used to treat these infections are very toxic and may further hamper the immune system, and garlic may have a role to play in maintaining the immune system's ability to fight these infections.

Parasitic infections in humans, livestock, and poultry have been treated with garlic. Garlic has been used to treat Ascaris, hookworm, and tapeworm infections, and it is used to control some parasites that contaminate vegetables. Further studies are needed to evaluate garlic's antiparasitic activity for human and veterinary applications.

Garlic as an antiviral

The antiviral activity of garlic has long been intimated by habitual consumers of garlic who rarely have colds or become victims of influenza epidemics. Garlic has been known to abort colds even in those who are not regular consumers. *In vivo* studies with mice revealed that garlic administration protected mice against intra-nasal inoculation with influenza viruses and enhanced the production of neutralising antibodies when given the vaccine. *In vitro* studies have shown that garlic has antiviral activity against the Herpes virus and the Influenza B virus. The antiviral activity of garlic in humans may be secondary to a direct toxic effect on viruses.

Human cytomegalovirus (HCMV) infection is a major cause of morbidity and mortality in immunocompromised patients such as those who have received an organ transplant and those with

acquired immunodeficiency syndrome (AIDS), anti-CMV agent is therefore recently an intensive field of research. Garlic has been employed as an anti-infection substance for centuries in China. It has been shown that garlic extract is effective against interstitial pneumonia after bone marrow transplantation which is largely due to CMV infection.

CHAPTER SEVEN

Garlic Research

Naturally, there is a lot of work being carried out in the fields of cancer and coronary heart disease to fully clarify the activity of garlic. Similarly, the antibiotic, antiviral and antifungal properties of garlic are attracting a lot of interest around the world.

All this is with the hope that certain components in garlic may be isolated and used even more effectively in these killer diseases. There is a very good analogy in the field of dermatology (skin problems) where fairly crude "coal tar" has been used to treat psoriasis for many years. However, when you start to remove certain compounds from the tar, its effectiveness is reduced, and scientists have still not been able to isolate all the active constituents. Garlic is in a similar state, in that, we know the raw form works in many ways, but we still need to isolate all the component parts to see if any of them are more effective on their own. So the moral must be, that if you are going to start supplementing your diet with garlic, try the raw vegetable or, if you prefer to use a supplement, pick one that is as close to good quality raw garlic as possible. That way you will not miss out on any of the beneficial components!

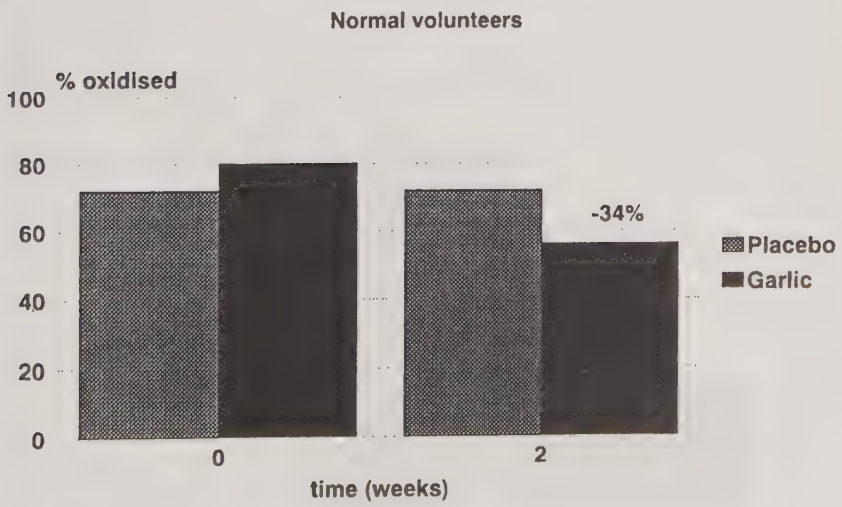
Garlic as an antioxidant

As we described in Chapter 4 in the section on garlic and cholesterol our bodies are unfortunately very good at storing unwanted cholesterol. We also have an enormous number of oxygen species called "free radicals" zooming around most of our body tissue. When "bad" low density cholesterol meets these free radicals it can become oxidised and subsequently deposited in the walls of arteries and, particularly those important arteries surrounding the heart – the coronary arteries.

These free radicals have been linked to many diseases including stroke, impotence and Parkinson's Disease. So any compound or food substance that can "mop up" these free radicals is known as an antioxidant. Probably one of the most popular marketing terms for any health food product these days is "antioxidant ability". Several large studies have shown that the essential vitamins A, C, and E are excellent antioxidants and may even reduce your risk of developing heart disease. However, several other studies have failed to support this theory for, in particular, vitamin C. So you could say that the jury is still out on this one.

In 1992 a symposium was held at The Royal Society of Medicine, (whose emblem is the herb all heal!) which presented the first work proving that garlic was a significant antioxidant. Subsequently published in the equally prestigious journal, *Lipids*, Professor William Harris and his colleague Stacy Phelps showed that by giving garlic tablets to normal individuals, and comparing with a set of controls who took a placebo, oxidation of "bad" LDL cholesterol could be reduced by 34 per cent. In other words the people not taking garlic were absorbing and depositing much more harmful fat in to their coronary arteries!

LDL Oxidation susceptability



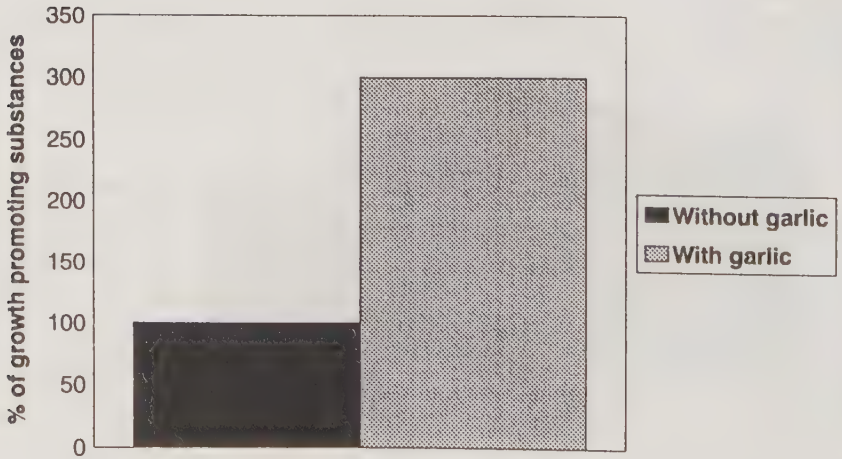
Lipids 1993

The free-radical scavenger action of garlic can probably be explained by its germanium, glutathione, selenium, and zinc content. The latter three are key components of the antioxidant enzymes, superoxide dismutase and glutathione peroxidase. Free radicals are suspected to be the culprits in a number of other degenerative disorders, which include ageing, arthritis, and cancer. One mechanism of ageing is thought to be secondary to the lipid microviscosity of cell membranes. Garlic may have great potential for retarding ageing because it inhibits the production of fatty materials. Garlic may play an additional role in oncology therapy by neutralising the free-radical damage to normal tissues caused by radiation and chemotherapy. In addition to its role as an antioxidant, germanium activates or substitutes for oxygen, which may be the most powerful stimulant of the immune system.

Garlic and pregnancy

Cut the complications of pregnancy naturally with garlic.

Effect of garlic on the amount of growth promoting substances in placental cells



New research shows that taking garlic during pregnancy can cut the risk of pre-eclampsia (raised blood pressure and protein retained in the urine). Studies reveal that garlic may help to boost the birthweight of babies otherwise destined to be too small.

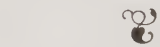
The research was carried out by Dr D Sooranna, Ms J Hirani and Dr I Das in the Academic Department of Obstetrics & Gynaecology at the Chelsea & Westminster Hospital in London UK. They concluded that although pre-eclampsia and growth retardation are complex conditions, with a variety of known and unknown causes, taking standardised garlic tablets throughout pregnancy may decrease the chances of these types of complications at birth. They focused on growth retarded babies and pre-eclampsia, a potentially dangerous condition for mother and baby which occurs in about one in ten pregnancies. Experiments by the research team showed that adding extracts of garlic to cells from the placenta of women likely to suffer from these conditions was able to quickly stimulate growth. Furthermore, the activity of key enzymes that are reduced in abnormal pregnancies were significantly increased when garlic was added.

Garlic and impotence

Garlic has always been well-known as an aphrodisiac and from a medical point of view it can improve blood circulation significantly. Now it appears that an enzyme called nitric oxide synthase (NOS) is primarily responsible for the mechanism of erection. Studies have recently shown that garlic in certain forms can stimulate the production of NOS, particularly in individuals who have low levels of this enzyme. Clearly, folklore is now being proven to be correct!

CHAPTER EIGHT

Other Uses for Garlic



Garlic and animals

For treating the simple problems that pets often have, garlic is ideal. A lot of research is currently underway in many different breeds, particularly chickens, who actually lay better eggs if they are fed garlic up until they begin to start laying! Feeding any longer will impart a garlic flavour to the eggs.

Most domestic animals benefit from taking garlic tablets, capsules or powder. Added to their feed, garlic is an effective worming agent and will also help to control ticks and fleas. Our pets often suffer from viral infections, just like we do, but these can be kept at bay, particularly through the winter months by adding garlic in to their diet. You may also help to sweeten the breath of dogs and particularly horses. For many years the French have added garlic powder to racehorse diets with the effect of building stamina and keeping circulation fit and healthy. For common problems like colic or croup, garlic can have excellent results!

Garlic for bites and stings

This remedy has been used for centuries, dating back to Egyptian times when raw garlic was rubbed over mosquito bites. These days, once the sting has been removed, simply cut a clove of garlic and rub it into the affected area.

Garlic for boils and cysts

Made into a lint dressing, crushed garlic soaked in olive oil, applied to the area affected and changed every day, will quickly reduce inflammation and ease pain associated with boils and cysts.

Cooking with garlic

Although most of the active allicin will be converted into other sulphur compounds when you cook with garlic, you will still get benefits, however small. So please do continue to use it, and try to increase the amount of garlic in your diet. History tells us that it is definitely good for you! As a nation we are slowly increasing the amount of garlic we consume and, whilst it may be many years before we can point to some concrete benefits, what an excellent way to improve our general health and well-being!

Garlic supplements

For those of us who find it quite impossible to bear the smell or taste of garlic, and there are a few! Fortunately, there are now an enormous variety of "healthy" garlic supplements available. It can be very confusing, and quite bewildering, when you go into a health food shop or a chemist to purchase a garlic supplement. There are literally hundreds of different brands and lots of "own label" products all seeming to offer the consumer some healthy garlic!

To be fair it is important to decide **WHY** you want to take a garlic supplement in the first place. If it is just to ward off coughs and colds during the winter or perhaps to lessen the chance of picking up a stomach bug when on holiday, then most garlic products will probably be of some benefit. Some even have a licence for preventing coughs and colds.

However, if you are really serious about improving your circulation or keeping your blood pressure and cholesterol levels under control, or wish to start taking garlic as a preventative measure, you really should buy a product that at the very least has been tested **in human subjects that have these conditions clinically diagnosed.** Remember that in the UK garlic products are not licensed for any medical condition and should not be used as such without at least informing your doctor.

Oils, pearls, capsules, tablets or raw garlic?

When all is said and done it does appear, at present, that a garlic product that can give you "allicin" is more likely to improve some of the more serious conditions than one that cannot provide it. With regard to raw garlic we have seen that there is a wide variation in the relative yield of "allicin" from different garlics around the world. We do know, however, that garlic in all its forms can be of benefit, but some are likeky to be very much better than others.

Independent analyses carried out at the Camden Food and Drink Research Association and at the universally renowned Warren Springs Laboratory, determined the "allicin release" and "total sulphur" content of various commercial preparations. The results show it does appear that garlic oil, pearl and capsule products are unable to provide allicin – because of the method of manufacture, that is to say, raw garlic is boiled so that allicin is removed. However, the resulting sulphur compounds are then concentrated many times so that some oil-based products do contain potentially beneficial sulphur compounds.

Think of it as a family – if you have the mother substance (in this case allicin) then you will get ALL the "sons and daughters" that come from allicin.

Some garlic powder tablet preparations (for example, Kwai, Sainsbury's Chinese garlic tablets) do have the ability to generate allicin, and therefore all the sulphur compounds that come from allicin will also be present.

Summarising all the currently available data shows that to significantly improve circulation, lower blood pressure or cholesterol, you would need to take up to six garlic powder tablets per day OR up to two of the "high strength" tablets. To get a fair comparison you would need at least five Cardiomax capsules per day (although this would mean that you still could not get ANY allicin) to get the same amount of sulphur into your system!

For general health benefits this dosage could be reduced by half if you choose Kwai. Alternatively, perhaps, try taking Sainsbury's Chinese Garlic tablets as these also contain some allicin (however, there is no research to show effectiveness). Many of the garlic oil preparations will also help to keep coughs and colds away, but there is little or no published information on these products when used in human subjects. Finally, some aged garlic extracts do contain sulphur,

but once again have no allicin, and very little clinical evidence is available on human subjects, although several very interesting studies have been published looking at which components in garlic are active. Thus they may prove more useful in the future.

But your first step is easy, cheap and great fun – add more garlic into your diet.

Garlic Festivals

Gilroy is a small town in Southern California and for many years now Gilroy and garlic have been synonymous. But it wasn't until Gilroy's annual Garlic Festival began in 1979 that the community embraced the local garlic industry. Today, Gilroy is best-known as "The Garlic Capital of the World" and is world-renowned for its annual Gilroy Garlic Festival where thousands of people flock to Gilroy to see, touch and yes, eat garlic.

Why is Gilroy called the "Garlic Capital of the World"? The California farms account for 90 per cent of all garlic produced in the United States. Currently, only 500 to 700 acres are actually grown in Gilroy – most is grown in Fresno, about 15,000 acres. Most of that garlic is grown within a 90-mile radius of Gilroy and comes to Gilroy at some point for processing. The local garlic industry is now estimated at $54 million, not including the host of industries that have blossomed in response to the popularity of the Gilroy Garlic Festival.

Garlic, however, is popular all over America and there are many festivals held during the year – another big event is the Hudson Valley Garlic Festival in Saugerties, New York. At most of these events you will find garlic flavour in virtually everything from wine to soap, ice-cream, candy, meat and cakes!

Not to be outdone we have a Garlic Festival in Britain too! Newchurch on the Isle of Wight puts on a splendid event every summer, usually in August, with all the proceeds going to a local charity. Prompted by a local grower of garlic, this festival is now well-established and worth a visit.

GARLIC

Tips, Tricks and Little-Known Facts about the Herb All Heal

1. Plant your garlic cloves in November as they tend to produce bigger bulbs the following spring

2. Hang your garlic up by its stalk in a cool, dry, airy place

3. Garlic bulbs are best stored in a cool, dark cupboard

4. Plant your garlic near carrots or roses and you will protect them from blight

5. Chew raw garlic every day to build up your strength

6. Garlic juice and wild thyme can be used as a prophylactic against snake bites

7. Take garlic tablets on holiday to ward off mosquitoes

8. Rub garlic paste over an aching tooth and it will remove the pain

9. Put a clove of garlic in a child's shoe to prevent whooping cough (the smell will be excreted through the lungs!)

10. Chew parsley after garlic to prevent the dreaded "foul breath"

11. Suck a peppermint after consuming garlic to prevent bad breath

12. Feed garlic to your horses to "sweeten" their breath

13. Give garlic powder to your dogs and cats to prevent fleas and ticks

14. Add baked garlic to your weekly roast for extra flavour

15. Rub a crushed clove around your salad bowl to add that extra flavour without overpowering your meal

16. Raw garlic's potency can vary by as much as thirteenfold so pick a strong well-cultivated garlic (Chinese is best)

17. Buy garlic heads that are plump and unbruised as they will give the best flavour

18. Reject any bulbs that have started to dry out as they will have lost their flavour

19. Taking garlic tablets with a fatty meal will help your body absorb much less fat from the meal – bring back the British breakfast!

20. The world consumption of garlic per year is approximately one clove for every person!

21. China, Thailand, Spain and Egypt produce the most garlic

22. The main producer in Britain is a farm on the Isle of Wight

23. In some countries the population regularly consume up to 50g of garlic every day (their coronary heart rate is much lower than the UK)

24. The town of Gilroy in California processes 90 per cent of the entire US garlic crop

25. Don't burn your garlic as it will smell awful – it singes much more quickly than onions do

26. Boiling garlic almost completely removes the odour

27. Your body will get much more benefit if you eat garlic that has been cut into slices as crushing will destroy much of the active "allicin"

28. Garlic can be bought as flakes, grit, pieces, powder or pickled

29. Dehydrated garlic is virtually odourless but when water is added the flavour returns almost completely

30. Garlic can reduce the levels of harmful cholesterol (LDL cholesterol) in your body

31. Garlic is a potent antibacterial and can kill some of the most resistant and harmful bacteria known to man

32. As you add more garlic into your diet the less any smell will be noticed

33. Three pounds of fresh garlic will yield one pound of dried garlic

34. Try swallowing a clove of garlic before you have your garlic-flavoured meal and you will smell as sweet as anyone who takes no garlic!

35. Raw garlic contains water, fat, sugars, pectin, cellulose, mucilage, total ash, acid-soluble ash, peptides and proteins

36. Minerals including selenium, sodium, potassium, iron, cobalt, zinc, nitrogen, calcium, chromium, sulphur, magnesium, phosphorus, copper and iodine are all found in garlic

37. The vitamins A, B1, B2, and C are present in garlic thus accounting for its antioxidant properties

38. In the First World War the British Government offered one shilling per pound of garlic grown as it was used to prevent wounds from turning septic

39 Chickens lay bigger eggs if garlic is added to their feed – be sure to stop adding garlic as the hens begin to lay, otherwise your eggs will be garlic-flavoured!

40 Recently the *British Medical Journal* said you would have to eat between 7 and 28 cloves of garlic a day to get any real benefit to your circulation

41 Use a swab of garlic to stop a nosebleed

42 Garlic is an expectorant and can therefore be used for treating asthma, bronchitis and catarrh

43 Garlic is known to remove "the wind" as it is a strong carminative

44 Garlic will prevent tummy bugs and rid the dreaded diarrhoea

45. Garlic can be used to calm bites and stings – just crush three cloves of garlic and mix with some warm water. Dab it onto the affected parts

46. Mix garlic with lard and apply to your skin to help pimples and boils disappear

47. A cure for earache – Soak a peeled clove of garlic in olive oil for a few minutes and place it in your ear. The ache will vanish!

48. Garlic cough mixture – crush one clove of garlic into some honey or syrup. Take one tablespoonful twice a day

49. Garlic has magical powers that can protect you against "witchcraft"

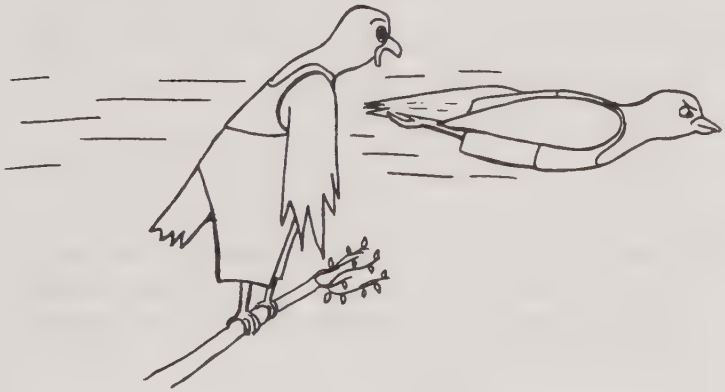
50. If you dream of garlic you will discover hidden secrets or treasure but beware this may lead to domestic strife!

51. Garlic is used in Ireland and France to strengthen racehorses

52. Pieces of garlic scattered amongst grain will help to keep weevils away

53. Taking a large dose of garlic tablets as you feel a cold coming on will stop it completely

54. Pigeon racers add garlic to birdseed to add stamina and speed



55. Add garlic tablets to your dog's dinner and it will help to get rid of worms

56. The garlic supplement market in the UK is now worth over £25 million

57. Garlic is a prescription medicine in Germany, Holland and Denmark

58. Garlic tablets are the closest to raw, fresh garlic with only the water taken out

59. Garlic is good for diabetics as it will help normalise the level of body fats that can get out of control in this special group of patients

60. Cancer studies have shown that the more garlic you eat the lower your risk of developing various stomach cancers

61. Garlic is the only antibiotic which at the same time as killing bacteria also encourages digestion and protects the body against poisons produced by the infection

62. Components of garlic can stop cancer-causing agents from binding to human breast cells

63. Garlic is an excellent antioxidant that can reduce harmful free radicals circulating in your body

64. Coronary heart disease rates could be cut by 20 to 25 per cent if everyone was encouraged to add Chinese garlic into their diet or take garlic tablets regularly

65. Garlic is a member of the lily family and its English name is thought to come from the Anglo-Saxon "Gar-Leac" or Spear Plant

66. Garlic can prevent the build up of fat in your coronary arteries

67. Bury three peeled and pressed cloves in half a cup of sea salt. Leave it for a few days in a screw top jar. Remove the garlic and use the salt as a seasoning

68. Add peeled cloves to a jar of oil, refrigerate and leave for 2 to 3 days before using. Brush on foods before they are grilled or sautéed

69. Add peeled cloves of garlic to white wine vinegar and keep for 2 to 3 days before using in salad dressings

70. It is estimated that the incidence of stroke in the UK could be reduced by 30 to 40 per cent if garlic tablet supplements were used by everyone at risk

71. Studies have shown that some of the components of garlic can mitigate the effects of some of the most potent carcinogens known, including those found in cigarette smoke

72. Garlic can protect your blood cells against damage from various pollutants such as lead, mercury, copper and aluminium

73. For mouth ulcers chop the end off a clove of garlic, dip it into a pot of natural yoghurt and apply it directly to the mouth ulcer. It will sting but only for a moment!

74. Taken regularly, garlic can help your circulation by thinning the blood and making it less likely to clot

75. Independent research confirms that many garlic supplements cannot provide ANY of garlic's active principle "allicin"

76. Studies confirm that garlic can reduce blood pressure (both systolic and diastolic) by up to 10 per cent

77. Garlic was used by the invading armies from France in 1066 for adding strength and stamina to the archers

78. Over three million Germans take garlic tablets every day

79. Thomas Culpeper the famous physician described garlic as "the herb all heal"

80. Shakespeare wrote in *A Midsummer Night's Dream* that actors should eat no onions nor garlic, for we are to utter sweet breath

81. A study comparing garlic oil capsules with tablets showed recently that people much preferred to take tablets as they generally felt healthier!

82. Garlic was mentioned in 22 out of 800 herbal remedies in the *Codex Ebers,* an Egyptian medical papyrus of 1550 BC

83. For medical research the *British Medical Journal* says that carefully dried sliced cloves retain their potency, but extracts or oils prepared by using steam distillation may have little activity

84. If you have athlete's foot then simply crush some garlic cloves into a piece of lint and apply regularly to the affected area

85. When Mount Vesuvius erupted and buried Pompeii the surviving Greeks found garlic bulbs preserved in the ashes!

86. Henry IV of France (1553-1610) chewed garlic consistently and was said to have had "a breath that could fell an ox at 20 paces"

87. Common or local names for garlic include –Poor Man's Treacle, Devil's Posy, Witch Poison, Camphor of the Poor, and the Food of Love

88. Garlic is also known as Allium Sativum and there are over 500 members of the Alliaceae or onion family

89. The great chef, Marcel Boulestin maintained that peace and happiness begin where garlic is used in cooking

90. The 17th-century herbalist, Parkinson, advocated garlic as an antidote to drinking poison such as hemlock or wolfsbane

91. Another recorded breath-freshener used after eating garlic is the bitter herb rue

92. In Spain, fresh garlic shoots are a delicacy, fried for *tapas*

93. Pink garlic, ail rose, from Lautrec in south-west France has an appellation guaranteeing its provenance and quality, indicated on its red label

94. A garlic press adds a crude metallic taste to crushed garlic and is best avoided

95. Gargle with crushed cloves of garlic mixed with brewed sage and warm water – an excellent remedy for tonsillitis or excessive mucus

96. Adding garlic extracts to human blood cells that are heavily diseased with atheroma will reduce the fat content substantially and return the cells to normal

97. For haemorrhoids scrape a clove to produce juice, insert it into the rectum and leave overnight!

98. As an aphrodisiac garlic should be pounded with fresh coriander and taken in neat wine!

99. Chew a clove every day to help sinus infections

100. Check exactly how much garlic your supplement has in it as some are virtually "garlic-free"

101. Rub some garlic juice on to finger warts and they will disappear

102. Several bulbs of garlic were found in King Tutankhamun's tomb when it was opened – presumably to ward off evil spirits

103. Slaves building the pyramids went on strike when daily rations of garlic were stopped

104. Garlic originated in Siberia in the Kirgiz desert

105. Louis Pasteur (who discovered penicillin) also noted that garlic juice had a similar effect

106. Vegetarians beware. Many garlic oil capsules contain gelatine in the coating!

107. Another time-worn remedy for avoiding garlic breath – chew aniseed

108. Please don't store garlic in the refrigerator as it deadens the flavour

109. Garlic is a cardioprotective as it can thin the blood, reduce blood pressure and cholesterol

110. Garlic can increase fibrinogen levels making your blood less likely to clot

111. Garlic has been shown to increase blood flow to the nail fold capillaries

112. Improved circulation to the arteries in the eye has also been demonstrated with garlic

113. Investigators have shown that garlic can reduce blood sugar levels

114. People in the South of England eat twice as much garlic as those in Northern France!

115. Italian garlic is cultivated in the Po Valley region

116. Even though garlic has a powerful smell and taste it is virtually non-toxic

117. Garlic can upset some people's digestion so beware particularly if you eat it raw

118. Garlic does not interact with any other prescription medicine

119. Garlic acts synergistically with the blood thinning drug Warfarin (rat poison)

120. In Germany, garlic tablets are the largest "over-the-counter" selling medicine

121. In Denmark, garlic tablets have been shown to reduce cholesterol by over 8 per cent

122. Studies have shown that garlic can kill deadly human parasites including *Entamoeba histolytica* and *Giardia lamblia*

123. Garlic feeding has been used in animals to minimise the amount of lead in the meat of food animals which have been reared in a lead-polluted environment

124. Compounds of garlic are used in cancer patients to reduce the carcinogenic effect of prescription medicines

125. In mice infected with malaria, garlic was added together with a standard antimalarial drug and this combination completely prevented the development of the disease

126. When new mothers eat lots of garlic their new-born babies breast-feed for longer!

127. Garlic has been established as a medicine for thousands of years and was well-recognised by the Egyptians, Babylonians, Greeks, Chinese, Vikings, Indians and Romans

128. Allicin (garlic's main active ingredient) was first isolated in 1944 by the chemist Cavallito.

129. Garlic has been seen to cause weight loss, anaemia, dermatitis and asthma

130. Garlic has also proved beneficial to asthma sufferers by opening up the airways

131. The Germans know garlic as *"Knoblauch"*

132. In China garlic is called *"suan"*

133. Try rubbing crushed garlic onto your skin before sunbathing as it is thought to be a good sun shield – but if you feel any burning from the sun (or the garlic) cover up immediately

134. The Spanish word for garlic is *"ajo"*

135. Take a tablet of garlic every day to ward off stomach cancers

136. If you have problems with poor circulation take garlic every day to improve the situation

137. In the USA, both pigs and chickens are fed garlic to raise the levels of HDL (protective fats) in blood

138. Garlic can reduce the number of harmful free radicals circulating in your body

139. In rabbits given large amounts of cholesterol when fed with garlic their reduction in cholesterol was over 29 per cent

140. In 1875 the distinguished botanist, Eduard von Regel, published an account of over 250 species belonging to the Allium group

141. In India the oldest Sanskrit manuscript tells the story of the origins of garlic (AD 350-375)

142. The introduction of the famous Bower manuscript deals exclusively with garlic and dates back to the sixth century BC

143. In Tibet the Caravan men chew garlic as an antidote to altitude sickness

144. In China around the turn of the century it was traditional to eat two steamed meat patties called *chiao-tze* laden with garlic every day

145. The wild precursor to the garlic we know today was called Allium longicuspis and was found growing in narrow gorges to the west of Samarkand

146. In India, Rahu, King of the Asuras stole the elixir of life and the God Vishnu cut off his head. It is told that Rahu drunk the elixir and his throat stayed with his severed head – and from the blood that was spilt sprang garlic!

147. Muhammad says that when Satan went from the garden of Eden, garlic appeared from the ground where his left foot rested and onion at his right

148. Garlic is an elixir against the three humours of Indian medicine: wind, phlegm and bile

149. The Bower manuscript also says that: when women can no longer wear the cool seductive clothes of summer, and rooftop parties are too cold, then and only then should the Festival of Garlic be held

150. One clove of garlic can produce a head (or bulb) containing up to 20 cloves

151. Garlic can grow up to 3ft tall although wild garlic tends to be shorter

152. Garlic cannot fertilise itself by pollination and rarely produces seed

153. Appearances can be deceptive since small cloves of garlic often produce the most flavour

154. The 16th-century herbalist Tusser proclaimed "set garlicke and beans at St Edmund the King". St Edmund's Day is 15th November so plant your garlic then!

155. As the plant grows, bend back or break off the main stem to increase the size of the bulb

156. Garlic can be caught by blackspot and clove rotting caused by the fungi *Fusarium*

157. Garlic plants can also be attacked by nematodes, mites and the garlic mosaic virus

158. Garlic grows well next to plums and cherries but avoid placing it near peas and beans

159. According to legend the Romans liked to plant sweet violet (also known as love-in-idleness) next to garlic and onions

160. Protect your cucumbers from rust by feeding regularly with water that has had garlic soaking in it for several hours

161. The 16th-century herbalist William Turner recorded garlic as growing "in woddes about Bath"

162. Garlic is also known as ramsons or buckrams because its smell is as strong as a ram

163. Try rubbing a cut clove of garlic on the edges of broken china plates, apply medium pressure and they will stick together!

164. Soak your fingernails in warm water containing a cut clove of garlic. It will keep them strong and prevent splitting

165. The Russians call rams garlic *"cheremsha"*

166. In the 2nd century BC the Chinese called garlic the barbarian or *"hu da suan"*

167. In Arabia garlic is known as *"thoum"*

168. In Sumaria garlic was known as *"sum-sikil"*

169. Garlic is called *"aglio"* in Italy

170. In California there is a Society called "The Lovers of the Stinking Rose" where they have garlic in every course at their society luncheons

171. Chewing cardamom seeds can sometimes remove the garlic smell from your breath

172. In Holland the Dutch call garlic *"knoflook"*

173. *"Knapplaukur"* is the name given to garlic in Iceland

174. During both World Wars garlic was used to treat typhus and dysentery and to prevent wounds from turning septic

175. The Welsh name for garlic is *"garlleg"*

176. Italian voice coaches recommend raw garlic as a throat tonic to make the voice stronger

177. In Tibet garlic is known as *"go-cha"* which means white door

178. In Malay garlic is *"bawang poote"* or white root

179. In early Roman times the sweet odour of garlic was associated with labourers and the lower classes

180. In Spain it is traditional for bullfighters to carry garlic in to the arena so as to prevent the bull from charging

181. In 1982 the world crop of garlic was estimated by the United Nations as 2,315,000 tonnes

182. In Germany garlic tablets are manufactured in batches of 6,000,000 at a time

183. In India garlic is worn to fight off evil spirits

184. Native Indians from America used garlic to treat bee stings and scorpion stings

185. Chicken soup laced with garlic is called *"Jewish penicillin"*

186. The renowned Egyptologist Sir William Petrie was able to trace garlic back to 3750 BC well before the Pharaohs arrived in Egypt

187. The Greek writer Aristophanes wrote plays containing jokes about garlic including its medical uses

188. One clove of garlic contains between one and four calories!

189. A recipe for marital fidelity – both eat garlic!

190. The Roman poet Horace wrote a hymn of hate against garlic

191. In America garlic has its own newsletter *"The Garlic Press"* as a guide to its propagation and continued consumption

192. Shakespeare called garlic the food of rustics (*Henry IV Part I, III, IV* and *A Winter's Tale IV, 3*)

193. Following a visit to France the poet Shelley wrote "What do you think? Young women of rank eat – you will never guess what – garlick!"

194. Some people are allergic to garlic in any form – even the minute amounts used in some salad dressings

195. The national food of Peru is said to be garlic eaten with bread and potatoes

196. In Eastern Europe it is traditional for women to put garlic on their pillows during childbirth and in their children's clothes at baptism

197. Since 1948 over 1,500 scientific papers on garlic have been published

198. The director of the National Cancer Institute in America has said that garlic has the most potential of all foods as a cancer-fighting substance

199. Tibetan monks are forbidden to stay in the monastery if they eat garlic!

200. Researchers in America have shown that garlic can release 15 different kinds of antioxidant chemicals

201. In ancient Greece garlic was used as a diuretic and as a cleanser of the digestive system

202. Hippocrates used garlic as a test for pregnancy! (further details from The Garlic Information Centre)

203. The 2nd-century Greek physician Galen described garlic as "theriacum rusticorum" or "Poor Man's Treacle"

204. Dr Albert Schweitzer used garlic to treat cholera and typhoid in Africa

205. In Israel garlic is given to women for 10 days after childbirth to prevent infections and to help the uterus return to normal

206. Afro-Americans in the rural South have used garlic to prevent and treat high blood pressure since the days of slavery

207. Garlic has been shown to be effective in the treatment of lead, mercury, cadmium, and arsenic poisoning

208. Garlic is the richest source of organically bound selenium, which has been shown to provide some protection against heavy-metal poisoning

209. "Our apothecary's shop is our garden full of pot-herbs, and our doctor is a clove of garlic," an anonymous author wrote in 1615

210. It is said that over 70 per cent of the UK population use garlic and that over 30 per cent use it at least once a week

211. Garlic can improve blood circulation to the skin by as much as 47 per cent

212. Remember it's the smelly part of garlic that is the most active – "allicin"

213. The first chemistry experiments on garlic were performed in 1844 by a Professor Wertheim when an "evil smelling oil" was produced after passing steam through a bubbling garlic mush

214. Spanish experts suggest that you get more total sulphur from garlic if it is organically grown

215. Garlic is approximately 60 per cent water

216. Garlic contains at least nine parts per million of selenium

217. Garlic contains around 10 different sugars including glucose, fructose and arabinose

218. When you cut an onion a compound called propenyl sulphenic acid makes you cry; there is much less of it in garlic but it is there none-the-less

219. Amazingly, even the blood of people who eat a lot of garlic can kill bacteria!

220. A report in *Science Weekly* magazine in Frankfurt showed that freshly cut garlic could kill bacteria at a distance of 20 cm by its vapour alone!

221. Garlic is as effective as chloramphenicol (a powerful antibiotic) and can even kill strains that are resistant to it

222. The most garlic-sensitive bacteria is the frightening *Bacillus anthracis;* which produces the deadly poison anthrax

223. In the First World War physicians made their own ground garlic powder tablets as a cure for dysentery – this avoided the burning sensation found in the mouth when soldiers were told to eat raw garlic

224. Garlic is a known carminative as it stimulates the secretion of digestive juices

225. In Poland garlic has been shown to be effective against recurrent catarrh and chronic bronchitis

226. During a flu epidemic in 1965 in Russia the *Moscow Evening News* told everyone to "eat more garlic"

227. At the turn of the century garlic was also used in Ireland to treat tuberculosis

228. A number of successful case studies on tuberculosis were published in a book entitled *The Treatment of Tuberculosis with Oleum Allii* written by Dr William Minchin

229. In a study in Russia in 1972 garlic was used as an inhalant to treat over 200 cases of lung tuberculosis – successfully!

230. In Poland evidence for the use of garlic for infections in the middle ear is documented

231. In Australia garlic was used recently to cure ringworm infections and did so three times faster than modern drugs

232. Garlic has also been used to treat cases of Cryptococcal meningitis, a disease which is often fatal, and without any side-effects

233. In Russia garlic is officially recommended as a preventative against influenza

234. Researchers have found that garlic oil is less effective than raw or powdered garlic at treating infections

235. People have reported that taking garlic keeps colds away – over years and years!

236. Professor Wesselin Petkov from Bulgaria was the first person to study the effect of garlic on blood circulation when in 1949 he added it to the rabbits feed who had developed blocked arteries

237. Garlic is well known to make your blood less "sticky" and therefore less likely to form clots

238. Garlic has been shown to be almost 60 per cent as effective as the diabetes drug tolbutamide

239. Dr R R Sampson of the Royal Infirmary in Edinburgh wrote, "our findings indicate that the garlic content in proprietary health food *capsules* is insufficient to improve circulation"

240. In Cairo, street sellers call out *"Infa e' thoum"* – garlic is useful

241. Bites from insects and mosquitoes will not be helped with garlic since the pain they cause is due to inflammation

242. Scorpion stings produce harmful enzymes, they can be treated by cutting a clove of garlic and spreading it onto the wound

243. When boiling vegetables add several whole cloves of garlic into the water to add a super subtle aroma

244. In the last week of July in the town of Gilroy in California the world's biggest garlic festival is held every year

245. Garlic definitely repels vampire bats; in South America where these creatures live it is reported that they will not attack horses who are fed on garlic!

246. Farmers have found all around the world that garlic will help to keep their livestock free from ticks and other parasites

247. Garlic can rid the body of ringworm and pinworm although it is rarely used to treat this common Third World condition

248. German folk medicine has always said that eating large quantities of garlic can cure cancer

249. In 1982 researchers in America showed that injected garlic extract could reduce the growth of liver cancers in animals by over 50 per cent

250. Fresh garlic will irritate the stomach so try taking it with a little water

251. Prolonged contact with fresh garlic, particularly on the gums or on wounds, can cause blistering. However, sometimes it is used this way deliberately to draw out poisons – hence its use as a rubefacient

252. There have been studies where up to 70 cloves of garlic were ingested in a day with no sign of any side-effects!

253. Continued handling of garlic can cause skin rashes

254. If you find it difficult to tolerate raw garlic, either try mixing it with fennel, dill or caraway or take powdered tablets

255. The allicin content of Egyptian garlic is less than 0.03 per cent but Egypt is one of the largest exporters in the world

256. Chinese garlic contains over 0.6 per cent allicin

257. Two medium cloves of Chinese garlic is equivalent to approximately 10 Spanish cloves – try it and see for yourself!

258. Garlic was first grown in English gardens in about 1540

259. Life without garlic is tasteless!

260. I have been spending some weeks of dissipation in London, and was transformed by Circe's cup, not into a brute but into a beau. I am now eating the herb moly (garlic) in the country – Sidney Smith, 1813

261. The total US garlic crop is worth around $100 million every year

262. When cooking with garlic in Spain it is common practice to squash the cloves under a knife before chopping and so produce a slightly different flavour

263. During the plague in Marseilles in 1722 thieves who robbed the dead maintained that eating garlic protected them from infection. Hence "Four Thieves' Vinegar" was invented

264. Lepers acquired the name "pilgarlic" as they were made to peel cloves for their own consumption

265. Pliny, the ancient Greek physician, names 61 ailments that could be treated with garlic

266. In the Middle East garlic was carried as a talisman. In Chinese mythology, garlic is a ruse against the Evil Eye!

267. Hang garlic by the kitchen door to keep fairies away from the butter-churn

268. Garlic was used to treat rabies in the 16th and 17th centuries

269. Hungarian jockeys fastened cloves of garlic to the bits of their horses, believing that other horses would keep away (so eventually everyone did it!)

270. If crows eat garlic it stupefies them!

271. Spray garlic juice onto your plants to keep downy mildew away

272. As far as we know no organism has ever developed a resistance to garlic

273. In Russia they place a whole head of garlic (all the cloves) in a cup of milk to treat whooping cough

274. Use fresh Chinese garlic for infections, digestive problems and bronchitis – but use garlic tablets for improving circulation and helping blood pressure and cholesterol levels

275. When you chew raw garlic take a little water with it to lessen the burning taste

276. When garlic was used for treating dysentery it was often mixed with some cold yoghurt or sour cream

277. Raw garlic is often useful for treating acne and eczema as it tends to remove the internal impurities that cause the problem

278. Use garlic as an inhalant for nasal congestion. Take three or four cloves, crush them and add a little apple cider vinegar. Then pour on a pint of boiling water and inhale the fumes

279. Pliny claimed that taking pounded garlic with coriander and neat wine was a powerful Roman aphrodisiac!

280. In Anglo-Saxon days, flag and feverfew, garlic and radish were all used to help bronchial conditions

281. Garlic is as good as aspirin at thinning the blood but unlike aspirin it won't rot your stomach

282. In Germany the Health Ministry has declared that garlic is a medicine for "assisting in the dietary treatment of raised blood fat levels"

283. Also in Germany garlic is a licensed medicine for "preventing age-related deterioration of the circulation"

284. In Japan garlic preparations are accepted as a means of reducing blood pressure

285. Garlic appears in the official drug guides in both Spain and Switzerland

286. In 1933 in Eastern Europe, researchers found that garlic could not only stop atherosclerosis in cats but could also reverse it

287. According to Dr D Kritchevsky at the Wistar Institute in Philadelphia garlic slows down the manufacture of cholesterol and other fats in the liver

288. Garlic tablets have been shown to reduce cholesterol by up to 17 per cent

289. Garlic tablets have been shown to reduce the amount of "bad" cholesterol deposited in coronary arteries by up to 34 per cent

290. Garlic will start to work immediately but you need to persevere for several months before you see real benefits to your circulation

291. A recent study showed that patients taking garlic for high cholesterol not only reduced it but reported feeling much better whilst taking garlic tablets

292. Garlic has been proven to help patients with intermittent claudication (lack of blood reaching the limbs) to walk further!

293. Garlic is an excellent antiblood clotting agent as it can thin the blood and make it less likely to stick together

294. In France when a horse develops clots in the legs it is treated with a diet of garlic and onions

295. Ingestion of garlic leads to immediate and large reductions in blood clotting

296. Garlic is also able to break up blood clots very quickly, particularly in people who have already had a heart attack

297. Experiments in Oxford showed that eating garlic quickly stopped patients' blood platelets from sticking together

298. Although garlic thins the blood, experiments have shown that taking large quantities will not cause excessive bleeding

299. The German Federal Health Board declares that garlic has "No known side-effects" but if you eat to much you might stink!

300. Garlic is a harmless medicinal food taken by millions for thousands of years without any major problems

301. Even when dried garlic powder is diluted to 1 in 20 it can still kill the salmonella bug!

302. Garlic can kill the bacteria responsible for skin, lung, throat and mouth infections

303. Garlic has been shown to be as effective as the common antibiotic metronidazole which is used to treat amoebic dysentery – garlic is of course much cheaper and easier to produce!

304. Test your garlic tablets, since when crushed they should produce a burning taste and the rich garlic aroma

305. A 3,500-year-old medical papyrus, the *Codex Ebers,* lists 22 garlic recipes for stomach infections, boils, infected gland and muscle weakness

306. When the Romans first brought garlic to England it was used as a flavouring for goose

307. The well-known cook, Mrs Beeton, proclaimed in one of her books that "The smell of garlic is generally considered offensive"

308. The First International Symposium on garlic research was held at Lüneburg in Germany in 1989

309. One of the most popular commercial products called Kwai garlic has over 190 clinical papers published on its effectiveness

310. There are dozens of papers published each year on the effectiveness of garlic oil components – nearly all on animals at the moment

311. Properly stored, garlic powders will release only 10 per cent of their allicin content over a period of five years

312. The main active compound in garlic, allicin, has a half-life of four days when stored in water

313. Garlic is known as "The Stinking Rose" because of all the smelly sulphur compounds it can produce

314. Several papers have been published on the allergic reaction to garlic that some people exhibit

315. In America, the National Cancer Institute has developed a $20 million programme to study the effects of various plants including garlic

316. The First World Congress on the health significance of garlic was held in Washington DC in 1990

317. When growing your own garlic remember the plant prefers light, sandy soil

318. One of the easiest varieties of garlic to grow comes from Clermont-Ferrand in the Massif Central in France

319. If you need a supply of the finest English garlic seed corms contact Mersley-Boswell Farms in Newchurch, Isle of Wight

320. Make sure you plant your cloves pointed-side up!

321. Garlic can easily be grown in pots and window-boxes, provided that there is adequate drainage

322. When growing garlic, avoid soggy soil and overwatering

323. When your plants have flowered remove the heads and when the tops begin to go brown it's time to harvest!

324. Garlic bulbs are actually quite tender and will bruise easily so take care when you pull them out of the ground

325. Garlic products should not be given to children under six years old, but of course garlic may be added to their diet

326. If you have verrucae, try cutting a thin slice from a garlic clove and place it over the verrucae – continue this for a week and the verrucae will disappear

327. Garlic is often used as a preservative for cooked meats and for summer picked fruits

328. Garlic contains adenosine which acts on the blood protein fibrin which makes blood clot

329. In patients who have developed AIDS, one complication is resistant diarrhoea. Taking garlic tablets stops this problem completely according to researchers at Guy's Hospital, London

330. Generally, the higher your cholesterol the more likely garlic is to reduce it

331. Chefs believe that you get different aromas from garlic depending upon how you crush it

332. Researchers in America have shown that garlic can stimulate the number of natural killer cells in our bodies

333. Garlic can significantly increase the number of important T-cells that AIDS patients lack

334. Some physicians advocate using garlic to inhibit human cytomegalovirus which attacks people with poorly developed immune systems

335. People who are regular garlic consumers tend to have more white blood cells and are able to fight infections more easily

336. Recent results indicate that garlic may be able to help fight bladder cancer by inhibiting the growth of cancer cells

337. The skin cancer cells found in Burkett's Lymphoma are reported to be susceptible to garlic

338. The well-known journal *Annals of Medicine* suggests that as little as half a clove a day may be enough to reduce cholesterol

339. To prevent a vampire from leaving his grave at night, place a bulb of garlic in his mouth!

340. It is believed that around 500 species of Allium still exist today. Once their were over 1,000 species of onion, leeks, shallots chives and garlic

341. In many parts of Southern Europe (particularly Italy) garlic is found in almost every dish!

342. During the reign of Ramses III, in Egypt, garlic was used to preserve bodies!

343. As a cure for constipation try eating a clove of garlic every day

344. The woods on parts of Dartmoor have large amounts of wild garlic growing in them and the aroma produced is very subtle and healthy!

345. Garlic has been used much like smelling salts – to revive ladies who faint!

346. As a cure for nightmares, mince a clove or two of garlic into a bottle of red wine and take a glass each evening

347. Hang up garlic around the home to help get rid of bad smells!

348. To help rheumatism, try rubbing a peeled clove of garlic over the affected joint

349. When you feel a cold coming on either take a large dose of your garlic supplement or cut a clove and sniff the garlic for a few minutes

350. To get rid of moles try placing peeled and cut cloves of garlic in their holes

351. Chocolate covered garlic was served at The White House by Eleanor Roosevelt

352. Try rubbing corns with a cut clove of garlic every day until the corn goes

353. When garlic leaves its characteristic odour on your hands wash them with lemon juice to remove it

354. Take your garlic supplements with meals to reduce the risk of developing an odour

355. In Siberia the locals used to pay their taxes in garlic bulbs

356. In Italy garlic is eaten three times a day to relieve sore necks!

357. When growing garlic, if your soil is too rich the leaves will grow too much and your bulbs will be poor quality

358. When Chinese garlic (rich in allicin) is grown in other parts of the world it loses its ability to produce lots of allicin

359. Use sheep manure, which is rich in sulphur, to help your garlic grow strong and healthy!

360. Garlic's principle active agent is allicin

361. Many garlic supplements do not contain any allicin at all

362. Recently published information showed that patients taking garlic tablets felt that their general health improved whilst taking the tablets

363. Over 1,500 patients have taken garlic tablets as a part of a clinical research study; several million people take garlic every day because they already know it's good for them!

364. In India certain groups are forbidden to eat garlic and evidence shows that they have much higher cholesterol levels than those who do eat garlic regularly

365. At least 10 well-designed clinical studies have shown that one particular garlic tablet can consistently reduce raised blood pressure and therefore reduce the risk of a stroke by as much as 40 per cent

Why don't YOU give us
a tip, trick or fact about garlic
that we haven't mentioned?

366. The tip, trick or little-known fact about garlic for a leap year? – You tell me! Please write it in the space provided, and send a copy to me at the following address and I will include it in any future editions of this book! – Thank you.

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Acknowledgements

Garlic and Onions by Jill Norman ISBN 0-86318-787-0

The Little Garlic Book by Rosamond Richardson

Beating Heart Disease ISBN 1-900052-00-8

Preventing Heart Disease ISBN 0-340-53900-3

Garlic – Nature's Original Remedy ISBN 0-7137-1569-3

Garlic – The Life-blood of Good Health ISBN 0-7225-2132-4

All the above titles, together with all the research papers referred to, are available from The Garlic Information Centre, Saberdene House, Church Road, Catsfield, East Sussex TN33 9DP.

THE COMPLETE GARLIC HANDBOOK

365 Tips, Tricks and Little-Known Uses for Garlic

- Why are Garlic eaters healthier?
- How Garlic compares with prescription medication.
- Can Garlic prevent a heart attack or stroke?
- One clove of Garlic contains less than 4 calories!
- Tutankhamun's tomb contained six cloves of Garlic.
- Ancient Egyptians used Garlic to cure toothache.
- What does Garlic contain?
- How Garlic can reduce cholesterol.
- Garlic as a cancer preventative.
- Gilroy – "The Garlic Capital of the World".
- Why is Garlic known as "The Stinking Rose".
- Take Garlic tablets on holiday to ward off mosquitos.
- Garlic originated in the Kirgiz desert in Siberia.

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